

CORPORATE RISK MANAGEMENT IN AN IAS 39 FRAMEWORK



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Introduction to Corporate risk management in an IAS 39 framework

1.1 The purpose of this guidebook

IAS 39 – the new derivatives accounting standard published by the International Accounting Standards Board (IASB) – represents a revolutionary change in the approach to financial reporting of derivative instruments. Since derivatives are the primary tool for hedging and managing financial risks, it is not surprising that this change is causing companies and their auditors to scrutinise and, in many cases re-evaluate, the policies and practices of risk management.

This guidebook addresses the subject of corporate risk management in the context of IAS 39. Its objectives are to identify the issues and challenges for risk management presented by the new standard and to set out practical guidance regarding the formulation of risk management policy and the implementation of sound hedging strategies.

Under IAS 39 it is more important than ever that corporations formulate an appropriate risk management policy that reflects the business motivation, economic benefits and accounting impact. The basis for policy is clearly the value-added in economic terms of risk management activities. This value-added must be understood at several levels: the theoretical foundations for risk management, the empirical evidence for the economic benefits and the desire of investors for corporations to manage certain non-core risks. The introduction of IAS 39 paradoxically means that certain types of hedging, while bringing substantial economic benefits and reducing volatility in economic terms, can actually introduce more volatility into the balance sheet and income statement. This additional accounting volatility, despite having no economic foundation in many cases, must nevertheless be monitored and managed, because it will be highly visible to investors and analysts alike.

The new paradigm for corporate risk management that is discussed in this guidebook reflects a rational desire to capture the economic benefits

of hedging and, at the same time, manage any associated accounting volatility. This involves differentiating between “IAS 39-compliant” hedges that generate little or no earnings volatility, and “pure economic” hedges that reduce risk in economic terms but add volatility to earnings. While both types of hedges bring economic benefits, their differing accounting treatments mean that the tools to monitor and manage them must be different. The IAS 39-compliant hedges should be managed with a suitable framework for evaluating hedge effectiveness, such as HEAT, which seeks to align accounting effectiveness as closely as possible with economic effectiveness.

The pure economic hedges, on the other hand, should be managed against a carefully chosen earnings-at-risk limit, together with a well-articulated risk management policy that clearly conveys to investors the economic benefits and impact of hedging. While implementation of this paradigm requires a significant change to the way in which most corporations approach risk management, several companies have already taken major steps in this direction.

Along with a reassessment of their approach to risk management, corporations must also address the implementation of IAS 39 itself. This poses several major challenges. Foremost among these is the need to verify that all hedges are “highly effective” in order to qualify for hedge accounting treatment. The evaluation of hedge effectiveness certainly can be complex and demands careful attention. But there are also many other issues that are conceptually simpler, yet still require thorough planning by management at an early stage to ensure that they are fully operational.

1.2 A brief overview of IAS 39

Many countries and corporations are now adopting, or have already adopted, International Financial Reporting Standards (IFRS), or a similar set of accounting standards. The transition to IFRS

for listed companies in the EU is required for the first financial statement beginning after January 1, 2005 at the latest. As financial instruments, derivatives will need to comply with the requirements of the two financial instrument standards, IAS 32 “Disclosure and Presentation” and IAS 39 “Recognition and Measurement”. For companies with significant corporate treasury activities the financial and operational impact of these two standards, especially IAS 39, could be great.

The introduction of IAS 39 – like similar standards FAS 133 in the US, ACG 13 in Canada and AC 133 in South Africa – requires a radical change in the recognition and measurement of financial derivatives compared with current practice in most local GAAPs. Current practice often involves treating the derivative’s fair value as an off-balance sheet item with the current period’s net accrual being recognised in the income statement (ie, Accrual Accounting Model). The general principle upon which IAS 39 is based, however, is to require all derivatives to be carried on balance sheet at fair value with changes in fair value being recognised in the income statement (ie, Fair Value Model). The resulting impact on earnings, or income, can only be mitigated if the derivative is demonstrated to be a bona fide hedge and qualify for “hedge accounting” treatment under the standard. Hedge accounting treatment allows corporations to match changes in the fair value of the derivative with those associated with the underlying hedged item, and recognise these changes in the income statement in the same period. For highly effective hedges, these changes in fair value will largely (or completely) offset each other, significantly reducing the impact on the income statement.

Unless hedge accounting treatment is obtained the changes in the derivative’s fair value will create additional volatility in the income statement. This volatility is caused by the change in fair value of the derivative being recognised in earnings without the offsetting gains and losses in the underlying exposure. Many corporations fear that the additional income statement volatility generated from their current risk management strategy may

have an adverse impact on the valuation of the company, its credit rating and its borrowing costs. This is based on the belief that investors and analysts will see only the income statement impact and not the economics underlying the hedge. However, key stakeholder groups – investors, equity analysts, credit analysts and ratings agencies – have explicitly indicated that they will be looking to the underlying economics of hedging, rather than the pure accounting. If so, they should in principle treat any hedge-related earnings volatility in the appropriate economic way. Provided any new information disclosed does not change their views, the valuation of companies should remain unchanged. These issues are addressed in Chapter 3.

1.3 Achieving hedge accounting under IAS 39

In order to qualify for hedge accounting, and thereby avoid unwanted income statement volatility, a derivative must be formally designated at its inception as a hedging instrument in a specified hedge relationship. Furthermore, that hedge relationship must pass a numerical hedge effectiveness test both at inception and throughout its life. Evaluating hedge effectiveness under IAS 39 is a highly technical subject that, in practice, involves a considerable amount of complexity.

IAS 39, like FAS 133, recognises three types of hedge relationship:

- **Fair value hedge**, which hedges changes in the fair value of a recognised asset or liability that will affect reported net income (eg, a fixed-rate bond, that is swapped to a floating-rate coupon).
- **Cashflow hedge**, which hedges the variability of cashflows of a particular asset or liability (eg, a floating-rate loan, which is swapped to a fixed-rate coupon), or a highly-probable forecasted transaction that will affect reported net income (eg, a forecasted foreign currency cashflow, which is hedged with an FX forward contract).
- **Net investment hedge**, which hedges the changes in fair value coming from foreign

exchange volatility of the value of an investment in a foreign entity (eg, the net foreign currency assets of a foreign entity, which are hedged by a cross currency basis swap).

The standard requires formal documentation at hedge inception of:

- ☐ The hedged item (often called the “underlying exposure” or simply the “underlying”).
- ☐ The specific hedging instrument (a derivative or a foreign currency debt instrument).
- ☐ The designated risk that is being hedged.

The hedged item must be a specified recognised asset or liability, an unrecognised firm commitment, or an uncommitted but highly probable anticipated future transaction. As well as single hedged items, there is an ability to designate a portfolio of hedged items, provided that the individual items share a similar risk exposure for which they are designated and the fair value changes for the designated risk are expected to change in an “approximately proportional” manner. IAS 39 does not aim to restrict the circumstances in which a derivative may be designated as a hedging instrument, except for net written options. With respect to risk designation, the general principle is that individual risk factors in respect of a hedged item can be designated as the hedged risk, provided that these risk factors can be separately identified and measured.

This principle of being able to designate an identifiable portion of the risk as being hedged is commonly referred to as “portions”. Portions in respect of financial items includes, for example, Libor interest rate risk, own credit risk, FX risk, etc. Designation of portions for non-financial hedged items (eg, commodities) is explicitly limited to either foreign currency risk, or to all risk factors impacting the hedged item however.

At first glance the standard therefore may not appear unduly restrictive in terms of hedge qualification, enabling most common corporate hedging strategies to be designated as part of a hedge relationship. As such the economics of risk

management would appear to be accurately captured in the financial statements. However, as we can see in Table 1.1 this is not the case. Many economically justified hedges simply do not qualify for hedge accounting.

There are several aspects of the standard that provide challenges to obtaining hedge accounting and hence to realising the economic benefits of corporate risk management in the financial statements. First of all, the IAS 39 hedge relationship is essentially a micro relationship based on a single business level viewpoint. It does not take a consolidated view of the corporation, and it does not take a macro or aggregate view of risk. This micro focus creates significant challenges for strategic risk management.

A second hurdle to hedge accounting is the hedge effectiveness test. This test must be a numerical test to evaluate whether the hedge relationship is “highly effective”. Note that the operational accommodations available in FAS 133 such as the so-called “short cut” method for vanilla interest rate swaps and the “matched term” or “EZ-pass” method for foreign currency hedges are not allowed under IAS 39. The effectiveness test requires an analysis of the changes in fair value of the hedging instrument and the hedged item for the designated risk. The purpose of this analysis is to determine whether the fair value changes are expected to “almost fully offset” on a prospective basis (the prospective test) and actually offset within a 80–125% range (the retrospective test). The former prospective range is not explicitly defined in the standard but the understanding is that this range is tighter than 80–125% (at the time of writing the width of the prospective range was still under discussion by IASB). The tightness of these arbitrary thresholds, particularly for the prospective test, means that many economic hedges will not be able to fulfil the hedge qualification criteria (eg, many commodity hedges). Furthermore, for a large number of other economic hedges hedge accounting will only be achieved if the effectiveness test is designed in a very careful way.

The standard explicitly details that there is no single method for assessing hedge effectiveness,

acknowledging that the appropriateness of a given method is dependent on a number of factors, including the corporation's risk management strategy, the nature of the designated risk being hedged, and the type of hedging instrument being used. It outlines the use of mathematical techniques for the effectiveness test, noting that ratio analysis (also known as the "dollar offset" test) and regression are examples of specific techniques. Whilst this provides flexibility in the design of a hedge effectiveness methodology, the lack of practical guidance or direction in this complex area has led to many corporations inadvertently choosing an inappropriate methodology. An ill-chosen methodology, which means even the most intuitive perfect hedges fail the hedge effectiveness test, is worse than no test at all since it will give misleading results that conflict with the underlying economics. This is discussed further in Chapter 5.

1.4 Impact on risk management behaviour

The risk management philosophy implicit in IAS 39 contrasts sharply with the theory and practice of corporate risk management. Corporate risk management has historically been focused on managing risk on an aggregate basis, taking account of the corporation's consolidated exposure to various risks. Moreover, the effectiveness of hedges has historically been calculated in economic terms and measured by the degree of economic risk reduction achieved. Of course, in the past there was no formal requirement to evaluate hedge effectiveness, but it was often performed by the most sophisticated corporations and/or their investment bank advisors. IAS 39 has changed all this. The new accounting standard has forced corporations to document, monitor, evaluate and report hedging activities from a micro (ie, exposure-by-exposure) perspective. Furthermore, the accounting effectiveness of hedge relationships must be evaluated in fair value terms only, and against arbitrary effectiveness thresholds.

These differences are understandable as IAS 39 clearly reflects an accounting mindset. This

makes it challenging for corporations to develop a risk management strategy that is consistent with both accounting effectiveness and economic effectiveness. As a result, many corporations will ultimately find themselves having to implement an approach based on a blend of risk management objectives addressing both the fundamental economics and the accounting. These two aspects of corporate risk management are discussed in Chapter 4.

The lack of alignment between economics and accounting has already led some corporations to change their risk management policy to one that is more accounting friendly. Such behaviour is worrying as the value of risk management lies in its economic benefits, not how it is accounted for. These policy changes are driven by a fear of the additional earnings volatility that might arise from economically effective hedges that fail to qualify for hedge accounting treatment. They fear that this additional earnings volatility may have an adverse impact on the valuation of the company, its credit rating and its borrowing costs.

Corporations should, therefore, take some comfort from a recent seminar hosted in London by JPMorgan entitled "IAS 39 – How will investors react?". Investors and analysts alike emphasised that their focus would be the underlying economics and not the pure accounting. They unanimously agreed that, provided they had enough information, they would always try to look through the accounting to the underlying economic reality. As long as there was a sound economic rationale for hedging, they confirmed any hedging-related earnings volatility would not be viewed in a negative light. This is discussed further in Chapter 3.

1.5 Overview of this guidebook

In the following chapters we discuss in greater detail the issues identified above. Chapter 2 begins with a review of the benefits of risk management from both a theoretical and an empirical perspective. These economic benefits should form the basis of all risk management policies and hedging strategies. Chapter 3 addresses the impact of IAS 39 on the volatility of earnings and

the balance sheet. The adoption of IAS 39 is widely expected to increase accounting volatility for most corporations regardless of their hedging strategies. However, initial evidence from investors and analysts suggests that they will not penalise companies with hedging-related earnings volatility, provided the hedging is consistent with a well-founded risk management strategy, and providing there is sufficient disclosure to illuminate the underlying economics.

Chapter 4 then presents the new paradigm

for corporate risk management, which aims to capture the economic benefits of hedging while, at the same time, managing any hedging-related earnings volatility. The management of earnings volatility is best implemented through a pre-specified earnings-at-risk monitoring limit and a well-articulated risk management policy. Chapter 5 deals with the evaluation of hedge effectiveness as required under IAS 39. It describes a framework for evaluating the effectiveness of hedges in both economic

Table 1.1: Examples of sensible economic hedges that lead to earnings volatility

Example 1: Entity: Underlying: Hedge: Comment:	Foreign currency earnings translation European multinational with EUR functional currency. Foreign currency profits in USD earned by foreign subsidiaries. Strip of quarterly foreign exchange forward contracts hedging the first \$120 million of the USD earnings over the next three years. IAS 39 does not permit hedge accounting for hedges of foreign currency earnings translation.
Example 2: Entity: Underlying: Hedge: Comment:	Intercompany foreign currency exposure UK parent with GBP functional currency. Foreign currency dividends paid in USD by a USD subsidiary to the parent. A 5-year coupon-only currency swap hedging the first \$10 million of the dividend flow over the next five years. At the time of writing IAS 39 does not permit hedge accounting for hedges of intercompany risk exposures, unless they are recognised assets or liabilities. That is, the dividend must already be declared before hedge accounting is permitted, which cannot be the case for medium-to-long term hedges.
Example 3: Entity: Underlying: Hedge: Comment:	Long-term foreign currency contracts European company with EUR functional currency. Foreign currency receipts in USD paid by a client on completion of key stages of a long-term project under a contract. Long-term foreign currency forwards hedging the planned payments. Although the amounts of the foreign currency receipts may be specified, the timing will generally be uncertain and dependent on the project's progress. This uncertainty is often sufficient to rule out hedge accounting treatment under IAS 39.
Example 4: Entity: Underlying:	Option hedges UK company with GBP functional currency. Foreign currency payment to be made in AUD in 1 year.

and accounting terms. This framework is known as HEAT, an acronym for “Hedge Effectiveness Analysis Toolkit”. As the design of an effectiveness test can make the difference between a “pass” and a “fail”, the HEAT framework sets out alternative effectiveness methodologies and provides guidance on making appropriate choices.

In Chapters 6 and 7 the guide turns to more practical implementation issues. These chapters have been contributed by Matt Read of Deloitte

& Touche and provide an auditor’s perspective on IAS39. Chapter 6 first discusses what needs to be done in preparing for IAS 39, and then Chapter 7 describes what auditors will be looking for in an IAS 39 audit. Chapter 8 continues on this practical theme by reviewing the lessons that can be learnt from the implementation of FAS 133 in the US. Finally, Chapter 9 discusses the practical aspects of formulating risk management policy and implementing a suitable risk management process. ■

Hedge:	One-year forex option hedging against the appreciation of AUD above a rate AUD/GBP = 2.40.
Comment:	In principle under IAS 39 the full change in fair value of an option can be designated as part of the hedge relationship. However, to be “highly effective” and obtain hedge accounting, generally only the intrinsic value of the option is designated. The time value of the option must be reflected in earnings, which is different from the treatment in FAS 133.
Example 5:	Commodity hedges
Entity:	European airline with USD functional currency.
Underlying:	The cost of jet fuel
Hedge:	NYMEX crude oil futures contract
Comment:	Since commodity prices are non-financial risks, IAS 39 does not allow hedge designation for just that portion of the price risk that corresponds to the exchange-traded futures contract. As a result there will almost always be a basis risk between the underlying and the hedging instrument that will often lead to a hedge relationship that is not “highly effective”. In this particular case, although the long-term correlation between jet fuel and crude is high, the short-term correlation is not.
Example 6:	Interest rate cap on interest payments that have been swapped to floating
Entity:	French company with EUR functional currency
Underlying:	The net floating-rate interest payments due on a 5-year fixed-rate bond issue that has been swapped to floating rates.
Hedge:	Five-year interest-rate cap hedging against floating-rate interest payments above 5%.
Comment:	IAS 39 does not permit a synthetic exposure to be an underlying hedged item on the basis that this would involve hedging a derivative with a derivative, which is not permitted. (Note however, the macro hedge proposal, which is under discussion at the time of writing may allow this to some extent).

The value of corporate risk management

2.1 The importance of managing risk

Over the past two decades corporations have become increasingly aware of the array of risks facing their businesses. Despite a flawless business strategy and finely-tuned operations, corporate performance can be knocked off course by a variety of risks outside the direct control of the business. In fact there are many examples of how an organisation's corporate strategy has been destabilised by fluctuations in economic and financial variables, such as interest rates, foreign exchange rates, commodity prices and inflation.

For example, the appreciation of the US dollar in the early 1980s forced many US exporters into making price cuts that severely dented their profitability. More significantly, however, this 50% appreciation in the real exchange rate damaged the long-term competitiveness of many US companies, as lower sales and lower capital investment took their toll. But the adverse impact of dollar appreciation was not limited to US corporations alone. In 1981 a UK airline, Laker Airlines, was sent into bankruptcy largely because of the currency mismatch between its sterling revenues and its dollar expenses.

By contrast, the recent depreciation of the dollar – a 20% fall relative to sterling and the euro in just over five months from September 2003 – is putting exporters and domestic producers in other countries under similar competitive pressures, as US corporations exploit their newly found pricing advantage.

Another example can be found in the precipitous fall in oil prices in January 1986. From a high of over \$31 a barrel in November 1985, the closing price of WTI stayed in a \$10–\$17 range from February to December 1986. This fall may have provided a welcome boost to the economy as a whole, but it caused profits at oil companies and their suppliers to plummet, and investment programmes to be sharply curtailed.

These examples illustrate how volatility in

financial variables can have a significantly negative impact on profitability, investment, long-term competitiveness and even survival.

2.2 Corporate risk management and hedging

Corporate risk management refers to the activity of measuring, monitoring and adjusting the profile of risks to which a company is exposed. In its broadest sense, this encompasses the full range of risks including legal risks, reputational risks and operational risks, as well as the more readily measured financial risks. For the purposes of this book we shall focus on financial risks, which we take to include foreign exchange risk, interest rate risk, equity price risk, commodity price risk, credit risk and inflation risk. The main difference between these so-called financial risks and other business risks is that the former can be traded, while the latter in general cannot.

Risks and exposures

The starting point for risk management and hedging lies in understanding a corporation's exposure to different risks. The exposure to a particular risk reflects how that risk impacts performance. For example, a company's exposure to currency risk will generally be through its foreign currency revenues, costs, capital expenditure, debt and/or assets. These exposures determine how foreign exchange volatility impacts corporate performance in terms of cashflow, net income, balance sheet, debt covenants and the value of the firm.

The process of understanding a corporation's exposure to different risks and how it feeds through to performance is called "exposure mapping". The result is an "exposure map" that describes in a consistent way the impact of different risks on various performance metrics (see, for example, Coughlan (1998) and Stulz and Williamson (1997)). It goes without saying that

the exposure map must be an accurate reflection of the corporation's actual risk exposures, since it may otherwise lead to an inappropriate risk management strategy and destroy value.

Hedging

Hedging is a vital element of corporate risk management that involves reducing the exposure of the company to particular risks. But it is important to note that risk management is much more than just hedging and risk reduction: it also involves ensuring that corporations are taking the right kinds of risks and that in general these risks are appropriately balanced within the company's risk profile. Hence risk management is a much broader activity than hedging.

It is also important to note, that not all hedging is good. Investors often invest in specific companies and industries to gain exposure to particular risks, for example, many oil company investors want exposure to oil price volatility. Hedging these risks would be bad risk management. Several other factors also need to be weighed up in hedging decisions to ensure they correspond to good risk management. These include the cost of the hedge, the required flexibility, the credit exposure to the derivative counterparty, and the timing of cashflow requirements (eg, margin calls) associated with the hedge (cf. Metallgesellschaft).

2.3 Why manage risk?

It is obvious that a corporation should only engage in risk management if it adds value. But to be rewarded by investors, it must add value in ways that investors cannot do on their own. In this section we review how and why corporate risk management can be a truly value-added activity. For a review see Culp (2001).

Our starting point is to identify the circumstances under which risk management does not add value. According to Modigliani and Miller (1958, 1961), provided certain conditions hold, investors should not reward firms for taking on debt or paying dividends, because they can do these things just as well on their own. So, under the assumed conditions, the capital structure

decision and the dividend decision are irrelevant for the value of the firm. Virtually identical arguments can be made to imply that investors should not reward firms for managing risk and hedging ... provided these conditions hold!

In the real world, we know that decisions relating to capital structure, dividends and risk management do indeed make a difference, because the conditions assumed by Modigliani and Miller do not hold in practice. So the reason why risk management can add value is due to imperfections in the Modigliani-Miller assumptions, namely:

- ☐ Frictions in the capital markets.
- ☐ Conflicts between stakeholders and managers.
- ☐ Conflicts between equityholders and debtholders.
- ☐ Asymmetries of information.

These imperfections provide opportunities for risk management to:

- ☐ Increase expected cashflows.
- ☐ Reduce the cost of capital.
- ☐ Improve the process in which different stakeholders work together to maximise firm value and stakeholder welfare.

Considering the first of these opportunities, corporations can use risk management to raise expected cashflows in a number of different ways: by reducing expected taxes, by reducing the expected costs of financial distress and by protecting investments.

Reducing expected taxes

If corporations face a tax schedule which is convex (ie, the average tax rate rises as pre-tax income rises) then risk management can reduce the average tax payments made over time by hedging pre-tax earnings (see Smith and Stulz (1985) and Graham and Smith (1999)). In this situation, the smoother the profile of pre-tax earnings the lower the average tax paid. The appropriate hedge is one that minimises the volatility of pre-tax earnings. The optimal amount of hedging will be

determined by the level at which the marginal cost of hedging equals the marginal benefit in terms of expected cashflow.

Convexity in a corporation's tax schedule can be due to a progressive tax rate (ie, an increasing marginal tax rate), tax carry-forwards, tax credits and other tax shields that defer tax. This is an example of accounting/tax-driven risk management that can bring a real economic benefit.

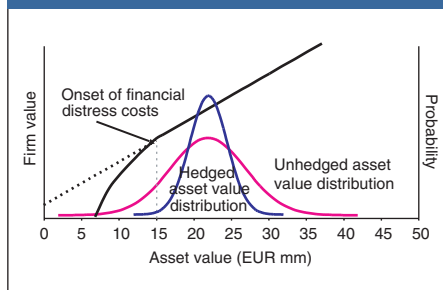
Reducing the expected cost of financial distress

By reducing the probability of incurring losses that are large enough to lead to bankruptcy, hedging can reduce expected bankruptcy costs. Although the direct costs of bankruptcy (associated with legal and administrative fees) are relatively small, there are a number of much larger opportunity costs that arise even before a firm enters bankruptcy. These indirect costs are incurred when the risk of bankruptcy rises significantly and the firm enters a state of financial distress. In this state the firm is subject to additional indirect costs that include:

- (i) lost investment opportunities, as managers are less inclined to take on new projects;
- (ii) lost customers, due to concerns about the firm's ability to meet future warranty and servicing obligations;
- (iii) employees that are inclined to leave or become distracted; and
- (iv) suppliers that are reluctant to enter long-term contracts or extend credit. Financial distress can also trigger debt covenants that restrict the ability of management to make decisions and constrain the firm's room to manoeuvre.

The important point about financial distress costs is that they are much larger than direct bankruptcy costs and the probability of incurring them is much higher. Appropriate risk management can not only help to ensure the survival of a business, but it can also help corporations avoid financial distress and its attendant costs (Smith and Stulz (1985), Stulz (1996)). This is explained schematically in Figure 2.1.

Figure 2.1: Hedging can reduce financial distress costs



Protecting investments

Corporations create value by making good investments. These investments require enough cash to be generated internally in order to fund them. When companies fail to generate enough cash internally they need to rely more heavily on external financing. Because of imperfections in the capital markets, external funding can be much more expensive than internal funding. As a result cashflow shortfalls can lead to lower investment returns and a reduction in the level of investment. In particular, firms that do not generate enough cash internally tend to cut investment.

In an influential paper Froot, Scharfstein and Stein (1993, 1994) argue that external funds are always more expensive than internal funds, and that a reliance on external financing always leads to under-investment. They draw the conclusion that risk management should have “a single overarching goal: to ensure that a company has the cash available to make value-enhancing investments”.

The difference in costs between internal and external funding varies significantly from firm to firm. It is in general greater for firms with higher financial leverage (or gearing). External borrowing by highly-levered firms requires a greater premium to compensate for the higher expected costs of financial distress. By contrast, issuing additional equity capital can be even more expensive and, because it redistributes wealth from shareholders to debtholders, may not be a practical alternative.

The difference in funding costs is also greater in general for firms whose investments are difficult to evaluate externally. Research and development (R&D) investments provide an obvious example of this and companies with high levels of R&D typically hold large cash balances to minimise the need for external financing. In a well-known case study Lewent and Kearney (1990) document how foreign exchange volatility impacted R&D expenditure at Merck and Company: “Our experience, and that of the industry in general, has been that the cashflow and earnings uncertainty caused by exchange volatility leads to a reduction of growth in research spending.”

Reducing the cost of capital

Risk management can also reduce the cost of capital of a firm. One example of this involves a situation that we have not yet discussed, namely the case where the owners of the firm do not, and cannot, hold well-diversified portfolios. In this case the idiosyncratic risk specific to the firm will increase the cost of capital, since this risk cannot be diversified away. Hedging this idiosyncratic risk will, therefore, lower the cost of capital and increase the value of the firm. Another example involves using hedging to reduce the expected costs of financial distress as discussed above.

Reducing agency problems and stakeholder conflicts

Risk management can also provide a substitute for costly monitoring of management, by providing positive signals to stakeholders regarding the commitment to, and the progress achieved in, investment projects. Investors and equity analysts might undervalue a company where there is uncertainty and/or poor disclosure regarding performance. By engaging in an appropriate hedging programme to reduce the volatility of earnings or cash flow, the company is ensuring investors cannot attribute more volatility than is warranted to problems with the business. The use of risk management in this way to increase the signal-to-noise ratio ensures that the infor-

mational content of financial variables is maximised (see DeMarzo and Duffie (1995)).

Another opportunity for value-added risk management arises in the situation in which a corporation has a large debt overhang. In such circumstances the firm may reject projects that increase the value of the firm simply because the increase in value accrues primarily to debtholders but the investment is paid for by equityholders (see Myers (1977)). Foregoing these investment opportunities is a rational decision for equityholders if they get too little of the value benefit, because shareholder value will be reduced despite the increase in overall firm value. This can lead to an under-investment problem that is different from that described above. The role of risk management in this situation is to lower the effective leverage (or gearing) of the company by reducing the risks that can destroy equity value and increase the relative proportion of debt in the capital structure.

In addition to reducing under-investment, risk management can also reduce so-called “asset substitution” costs, which similarly arise through the conflicting objectives of debtholders and equityholders (see Fama (1976), Jensen and Meckling (1976) and Bessembinder (1991)). These costs arise when equityholders suggest that they are pursuing low-risk projects prior to debt issuance, only to substitute higher-risk projects once the debt has been issued. If debtholders are not aware of this potential substitution they will find a portion of their wealth transferred to equityholders. This is because potential gains accrue to equityholders whereas potential losses are borne by debtholders. Rational debtholders will anticipate this opportunistic behaviour and raise their lending rates. Through a carefully designed hedging programme to limit the potential losses the firm can reduce debtholders’ concerns about being expropriated, which reduces borrowing costs and increases the value of the firm.

2.4 Empirical evidence

The previous section described the theoretical motivations for corporate risk management and hedging. In practice, the risk management

strategies adopted by companies are based on a combination of motives that can be difficult to disentangle. Empirical research by a large number of academics has used regression analysis to explore the linkages between hedging behaviour and financial variables, from which rationales for risk management are inferred. These methods present challenges in drawing firm conclusions because of the complexity of factors involved and the limitations of public data. Nevertheless, a growing body of research indicates consistency with the theoretical motivations discussed above.

For example, empirical research from several independent studies concludes that firms actually do hedge to reduce the costs of financial distress (Dolde (1995), Haushalter (2000), Graham and Rogers (2002)). Similar studies conclude that firms also hedge to protect investment opportunities, such as R&D expenditure (Nance, Smith and Smithson (1993), Dolde (1995), Allayannis and Otek (2001)). Other work suggests that companies hedge to increase debt capacity. In particular, Stulz (1996), Ross (1997), Leland (1998) show that by reducing the volatility of income and/or the probability of financial distress, hedging increases debt capacity. This increased debt capacity raises firm value in two ways.

First, it allows more debt and therefore a greater tax shield benefit, and second, it leads to lower expected default rates and distress costs if the additional debt capacity is not used. Graham and Rogers (2002) in their study of 442 US firms conclude that firms hedge to increase debt capacity as well as to reduce expected financial distress costs.

By contrast, there seems to be little evidence

that corporations hedge in response to the convexity of their tax function, mainly because the benefits are typically (but not always) quite small (Graham and Smith (1999)).

Recently a few papers have attempted to examine the link between hedging and company valuations more directly (Allayannis and Weston (2001), Graham and Rogers (2002) and Carter, Rogers and Simkins (2003)). Their conclusions are that hedging is associated with higher firm values. For example, Carter, Rogers and Simkins (2003) analysed jet fuel hedging by US airlines and found a hedging premium corresponding to a 12–16% increase in firm value. They also found a positive relationship between hedging and capital expenditure that suggests that the principal benefit of hedging comes from reducing under-investment.

2.5 Conclusions

This chapter has discussed the rationale for risk management and hedging from both theoretical and empirical perspectives. Taken together, the case for risk management is strong. Hedging brings economic benefits via a number of channels, including lower expected costs of financial distress, protection of investment programmes, increased debt capacity and reduced agency costs.

In formulating their approach to IAS 39, corporations must ensure that they have a solid risk management strategy in place. This strategy must be based on sound economics, which are appropriately applied to the context of the industry and the business itself. Only with this foundation, can the accounting implications of hedging decisions be comparably weighed against the economic benefits. ■

IAS 39, volatility and the investor perspective

3.1 Introduction

The implementation of IAS 39 is likely to lead to increased volatility in reported financial performance relative to pre-IAS 39 results. Companies that reduce their level of hedging in response to the new accounting standard and companies that pursue optimal economic hedges will generally see an increase in earnings volatility and balance sheet volatility relative to pre-IAS 39 GAAPs. The possibility of additional volatility in the reported accounts has caused considerable concern for many corporations, as they fear it will lead to lower stockmarket valuations.

Although there is evidence that company valuations have historically been negatively correlated with the level of earnings volatility, feedback from investors, equity analysts, credit analysts and ratings agencies indicates that corporations should not fear a negative impact on their share price just because of additional earnings volatility arising from hedging programmes. Provided hedging is consistent with a well-founded risk management strategy that is also well-articulated, investors and analysts have indicated that their evaluations of companies will not be overly accounting-driven, but based on a desire to drill down to the underlying economics.

3.2 Performance volatility and company valuation

In this section, we discuss two aspects of the connection between performance volatility and company valuation. The first is that lowering volatility – particularly cashflow and earnings volatility – is a risk management objective that is generally valued by investors. The second is that not all volatility is bad. It is well known that certain investors want exposure to particular risks (eg, investors in oil companies want exposure to oil price risk and performance volatility driven by oil price volatility is not at all bad). More importantly, some of the volatility in reported

earnings can be merely an accounting artefact that does not reflect the underlying economic performance and should not therefore be reflected in valuation.

Investors value stability and low volatility

When discussing the issues of company valuation, investors, equity analysts and academics frequently state that firms with stable and predictable earnings and/or cashflow are valued at a premium relative to peers who exhibit higher volatility in performance. Indeed, as we saw in Chapter 2, the theory of corporate risk management would lead us to this conclusion. Furthermore, the empirical academic studies – which suggest that corporations with higher volatility have higher costs associated with financial distress, maintaining investment, and raising external finance – also support this conclusion. However, until recently there has been little direct evidence linking performance volatility with firm value.

In a recent paper Allayannis and Weston (2003) analyse a large cross-section of corporations and find a direct empirical relationship between the volatility of performance and the value of the firm. In this paper they present evidence that both earnings volatility and cashflow volatility are negatively related to firm value. The magnitude of this relationship is substantial and, according to their analysis, it is statistically significant. They also find that the effect is greater for earnings per share (EPS) volatility than for cashflow volatility. More specifically, a one standard deviation increase in earnings volatility decreases firm value by 6–21%, and a one standard deviation increase in cashflow volatility decreases firm value by 0–14%.

Their conclusion is that in general, investors do indeed value stability in earnings and cashflow, and tend to penalise volatility with lower stockmarket valuations.

Cashflow volatility versus earnings volatility

From a theoretical perspective, cashflow volatility should be more relevant for valuation than earnings volatility. This is for several reasons. First, cashflows reflect the underlying economics of the business and cannot be “managed” or “smoothed” in the same way as earnings. Second, company valuations are frequently based on discounted cashflow (DCF) models, where the value of the firm is essentially the present value of the firm’s future cashflows. Third, the financing of investment programmes is determined by cash needs, and external financing will be required if cash holdings are insufficient to meet the required capital expenditure. To elaborate on this third reason, volatility in cashflow can lead to a timing mismatch between the availability of internally-generated cash and the required investment outflows.

Earnings, by contrast, often obscure this timing mismatch and may give no indication that there is a need to raise new capital. So as Froot, Scharfstein and Stein (1993) argue, stable cashflows reduce borrowing costs by reducing the reliance on costly external finance. The fourth reason is related to the third. It is that financial distress and bankruptcy – along with their attendant costs – are brought on by problems with cashflow rather than earnings.

It is puzzling, therefore, at first sight why the impact of earnings volatility on firm value is greater than that of cashflow volatility. Is this saying that accounting is more important than the underlying economics?

Earnings matter too – but which earnings?

The greater impact of earnings volatility on valuation is consistent with the apparently greater focus of investors and equity analysts on earnings. Despite appearing less relevant from an economic perspective, earnings still convey important information that is not immediately apparent from looking just at cashflow. Earnings contains many non-cash items that are designed to match the timing of expenses (both capital and operating) with the timing of revenues, thereby allowing investors to see that the

firm’s projects are profitable and adding value.

But it is important to note that most equity analysts and investors make their own adjustments to the earnings number reported in financial statements. They frequently calculate a customised pro-forma earnings number that may exclude one-off items (eg, proceeds from the sale of a subsidiary) and non-cash items that are not deemed to reflect the fundamentals of the business. EPS is generally calculated with adjustments of this type.

They argue that the adjustments make this pro-forma earnings number a better metric of the underlying economic performance of the company from a valuation perspective. So pro forma earnings numbers, such as EPS, can be more closely aligned with cashflow and the fundamental economics of the firm than reported earnings.

This does not mean that the reported net income is a flawed performance metric. Far from it. Financial reporting and company valuation are different activities with very different objectives and, therefore, different earnings metrics are appropriate.

Earnings volatility and firm value

There are several possible reasons why earnings volatility has such a large impact on firm value. First, smooth earnings may serve as a signal to investors and lenders that the company has a low probability of default and therefore leads to low borrowing costs (Trueman and Titman (1988)). Second, high earnings volatility is associated with more frequent negative earnings “surprises” and institutional investors tend to avoid such companies (Badrinath, Gay and Kale (1989)). Thirdly, as Allayannis and Weston (2003) point out companies with volatile earnings tend not to be well covered by equity analysts, and as a result have lower valuations.

The reason why companies with little or no analyst coverage tend to be valued lower is essentially because of the greater informational asymmetry between equityholders and management (Lang, Lins and Miller (2002)). Finally, as we have argued above, pro forma earnings (as

opposed to reported earnings) may indeed be a good reflection of the true economics of valuation.

The above discussion provides us with an understanding of how the volatility in an appropriately adjusted pro forma earnings number can, like the volatility in cashflow, have important implications for valuation, and is therefore relevant from a risk management perspective.

3.3 Performance volatility and IAS 39

Why is volatility and its relationship to valuation relevant for IAS 39? It is relevant because putting on hedges that are economically appropriate can either increase or decrease the volatility of earnings, as well as the volatility of the balance sheet (depending on whether each hedge qualifies for hedge accounting treatment). As an example, consider the impact on performance volatility of economically effective cashflow hedges:

- Cashflow hedges that qualify for hedge accounting treatment under IAS 39 will not only reduce the volatility of cashflow, but will also reduce the volatility of earnings.
- Certain hedges that reduce the volatility of cashflow will not qualify for hedge accounting treatment and will, therefore, increase the volatility of earnings.
- Because cashflow hedges are recorded on the balance sheet at fair (marked-to-market) value and the underlying hedged items are not, they can significantly increase the volatility of the balance sheet and, in particular, the volatility of balance sheet equity whether they receive hedge accounting or not.

Figure 3.1 (overleaf) shows an example of the second kind of cashflow hedge that is highly effective in economic terms, but at the time of writing does not qualify for hedge accounting. The situation involves a UK company with sterling functional currency and a US subsidiary with US dollar functional currency. The UK parent implements a long-term cashflow hedge of the forecasted dollar-denominated dividends that

will be paid to it by the subsidiary. The hedging instrument is a long-maturity coupon-only currency swap, in which the UK parent pays the amount of the US-dollar dividends in return for receiving a regular stream of fixed sterling cashflows. The net effect is that the parent receives known sterling cashflows without any forex risk whatsoever. Provided the parent is certain that these dollar dividends will be paid, this is an effective cashflow hedge in economic terms. However, IAS 39 does not currently permit hedge accounting in this case (see Example 2 in Table 1.1, page 8). So changes in the marked-to-market value of the hedging derivative will be reflected in the income statement.

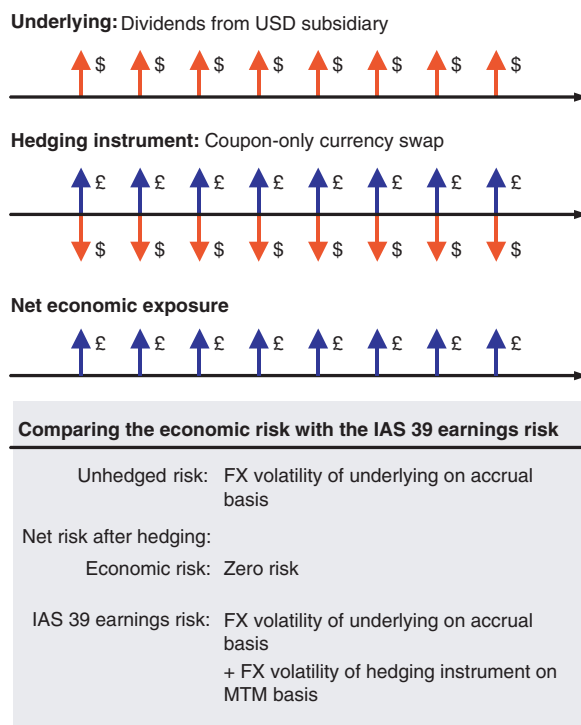
Therefore, as a result of putting on this hedge, earnings volatility is increased since the marked-to-market risk on the hedging instrument is much higher than the unhedged forex risk on each accrued dividend. If, however, the underlying cashflows were in fact contractual cashflows received by the UK parent entity from a customer, instead of forecasted intercompany dividends, then the hedge would qualify for hedge accounting and the earnings volatility as a result of the hedge would be zero.

So the new accounting standard changes the way hedging impacts the relationship between the volatility of different performance metrics. Since nothing has changed economically, the source of this additional volatility in the balance sheet and in earnings will need to be understood by investors if they are not to downgrade the price of the company's shares.

Regardless of whether a company hedges or not, the adoption of IAS 39 is widely expected to increase the volatility of earnings relative to current local accounting GAAPs. On the one hand, if a company hedges in the optimal economic way, regardless of the impact on reported earnings, then it is likely to transact hedges that don't qualify for hedge accounting treatment and lead to increased volatility in the income statement.

On the other hand, suppose the company focuses purely on accounting volatility and avoids the cashflow hedges it previously executed just

Figure 3.1: An example of an effective economic hedge that at the time of writing does not qualify for hedge accounting. A UK company hedges the long-term forecasted dollar-denominated dividends from its US subsidiary



because they will now give rise to additional earnings volatility through changes in fair value. Then paradoxically this will again lead to increased volatility in the income statement. Why? Because prior to IAS 39 the cashflows of the hedging instrument and the underlying exposure offset each other in the income statement, but now there is no hedging instrument and the underlying exposure still contributes to income statement volatility. Either way, relative to pre-IAS 39 levels, reported earnings volatility will increase!

3.4 How will investors and analysts react?

A major concern for corporations approaching the adoption of IAS 39 is how investors, equity analysts, credit analysts and credit rating agencies will react to the new accounting standard. In particular, will the anticipated increase in performance volatility associated with hedging activities have a negative impact on credit ratings and stock prices? From the discourse in Section 3.2 it would appear that the answer is

yes. However, as we shall now discuss, feedback from investors and analysts indicates that they will try to see past any IAS 39-induced earnings volatility through to the underlying economics. In other words, companies should not be penalised for any volatility arising from their risk management strategy, provided that strategy is economically beneficial, credible and well-articulated.

From the perspective of investors and analysts the adoption of IAS 39 means two things: a change in accounting and greater disclosure. The change in accounting has been the aspect that most discussion and concern has been focused on, as it represents a radical change in how hedges are recorded in financial statements. But changes in accounting are not new. For example, the introduction of FRS 17 for pension accounting in the UK constitutes a huge change in how pension costs and deficits are reported. Like IAS 39, FRS 17 is a move closer towards fair value accounting in financial statements. To understand this change in reporting, analysts and investors have needed to look through the accounting to the underlying pension economics, which has not changed. Investors and analysts are quick to point out that it is not accounting that drives company valuations or credit ratings, but rather the fundamental economics. However, the adoption of FRS 17 has changed some company valuations, not because of the accounting treatment, but because of the new information required to be disclosed.

At a recent seminar hosted by JPMorgan and chaired by the author, which was entitled “IAS 39 – How will investors react?”, investors and analysts alike emphasised the importance of seeing through the accounting to the underlying economic reality. In particular, they noted that with many local GAAPs currently providing different accounting perspectives on companies globally, it is already an essential part of credit analysis and stock price evaluation to bring performance back to a common economic basis. This involves making adjustments to the reported performance numbers to better capture the economic reality and is the only way in which the

companies can be compared on equitable terms. So with the adoption of IAS 39 corporations can expect investors and analysts to look beyond the accounting and to try to understand the underlying economics of hedging. The message from investors and analysts is that companies with hedging programmes that are economically sound, well communicated and credible should not experience an adverse impact on their stock price simply because the hedging process introduces additional earnings volatility.

The second implication of IAS 39 for investors and analysts is improved disclosure. IAS 39 provides more information on, and greater scrutiny of, the hedging activities of corporations. Greater disclosure is always welcome, but a key question in this case is whether or not the disclosure required by the standard is sufficient to help investors and analysts see through to the economic reality. At the same seminar mentioned above, investors and analysts also stressed the need for companies to explain the gap between the economic reality and the accounting. This means describing how to get from the reported numbers back to a more cash-oriented and economics-oriented metric. It also means clearly and credibly communicating the firm’s risk management policy. Companies will need to persuade the analyst and the investor community that hedging brings real economic benefits and is in the interest of investors.

In fact corporations have been encouraged to engage in an early dialogue with ratings agencies, analysts and investors on their risk management policy and how it is likely to be reported under IAS 39. Ratings agencies and sell-side equity analysts in particular can be used to help companies communicate their risk management policy to the investor community at large.

The increased level of attention that corporate risk management will receive under IAS 39 is welcome in helping to ensure appropriate hedging policies are being pursued. This also offers corporations an opportunity to increase investor understanding of the risks they face and how they are managed. If companies can demonstrate a thorough understanding of their risks and a

thoughtful approach to hedging them, they can differentiate themselves from their competitors.

3.5 Conclusions

For many companies, the adoption of IAS 39 is likely to lead to increased volatility in reported earnings and the balance sheet. This will be particularly true for companies that pursue risk management strategies that are driven more by economics than pure accounting. Although company valuations have historically been negatively related to earnings volatility, corporations should not fear that their share price will be automatically downgraded because of additional earnings volatility arising from hedging. Provided hedging is consistent with a well-founded risk management strategy that is also well-articulated, investors and analysts have indicated that their evaluations of companies will not be accounting-driven, but based on an assessment of the economics.

This means that corporations need to ensure that their risk management strategy is:

- ☐ Economically sensible.
- ☐ Clearly communicated.
- ☐ Supported by disclosure of enough data and commentary to help investors understand the economic reality.

A message that has come through clearly from investors is that corporations that focus exclusively on accounting performance without proper regard to the economics will certainly be viewed less favourably than those that focus on the economics of hedging.

It is therefore key for corporations to engage investors on risk management issues and demonstrate that their policy is well-conceived and well managed, with appropriate monitoring and controls. ■

A new paradigm for corporate risk management

4.1 Economic benefits versus accounting impact

Historically, corporate risk management has been motivated by the need to manage the economic risks facing companies. Hedging decisions have been driven by the economic benefits provided by hedges and accounting has not, in general, been an issue to be overly concerned about. In fact, accounting standards in most jurisdictions have been reasonably accommodative in terms of how hedges were reflected in financial statements. Many specifically required the qualitative proof of economic offset for hedge accounting and were, therefore, quite well aligned with the economics of hedging.

However, the new international accounting standard IAS 39 – together with FAS 133 in the US – have changed all that. The accounting is no longer fully aligned with the economics of hedging. In fact, there are examples of prudent economic hedges that significantly reduce risk in economic terms, but yet lead to increased volatility in reported earnings (see Table 1.1 in Chapter 1). In particular, hedges which demonstrably reduce the volatility of cashflow and/or the volatility of firm value can actually increase the volatility of earnings if they don't qualify for hedge accounting treatment.

The absence of full alignment between accounting and economics has complicated the process of making effective hedging decisions. In many cases these complications have, as we have mentioned in earlier chapters, had the effect of distorting risk management policy and practice: many corporations have chosen (at least temporarily) to forego the economic benefits of certain hedges in order to avoid earnings volatility at all costs. It is not that they no longer believe the economic benefits, but rather that they are afraid that any increased volatility in earnings will be interpreted negatively by investors and analysts. In these cases the

accounting has become more important than the economics.

Although the lack of alignment between the accounting and economics of hedging has complicated risk management, it has not made it impossible. A relatively small but growing number of corporations are recognising that it is possible to pursue a hedging policy that makes sound economic sense without overly compromising the accounting impact. These companies are implementing a new paradigm for corporate risk management, which seeks to find a better balance between economic risks and accounting volatility. This is based on a top-down approach combining economic risk management with a well-defined process for monitoring and managing any hedging-related accounting volatility that might arise. In this chapter we describe that paradigm.

4.2 Hedge effectiveness in economic and accounting terms

The starting point for any risk management decision should be whether the proposed hedge is economically sensible. That is, does the hedge reduce risk in economic terms at an acceptable cost? The answer to this question should be the first filter in screening potential hedges.

Evaluating hedge effectiveness from an economic perspective is a subject with a long history (see for example, Johnson (1960), Ederington (1979) and Franckle (1980)). It is usually measured in terms of the amount of risk reduction achieved through the hedging relationship, with direct reference to a particular risk metric such as volatility or value-at-risk. For the effectiveness result to make any sense, the risk metric used must be a statistical measure, as risk essentially reflects the uncertainty of different outcomes. The economic effectiveness test involves comparing the risk associated with the underlying hedged item against the risk of the portfolio

formed by the combination of the underlying and the hedging instrument. For a hedging relationship to be highly effective in economic terms, the risk of the portfolio must be considerably lower than the risk of the underlying. The actual degree of economic effectiveness achieved by a hedge will depend on the risk characteristics of both the underlying and the hedging instrument, as well as the correlation between them. In general the higher the (negative) correlation, the more effective the hedge.

In fact for any given underlying and hedging instrument the level of hedge effectiveness can be maximised by carefully selecting the so-called “hedge ratio”. The hedge ratio is just the amount of the hedging instrument that is used to hedge one unit of the underlying. Assuming that risk is being measured in terms of the volatility or standard deviation, then the maximal effectiveness is achieved for the optimal hedge ratio given by:

$$\text{Optimal hedge ratio} = -\rho \cdot \sigma_U / \sigma_H$$

where σ_U and σ_H are the volatilities of the underlying and the hedging instrument respectively, and ρ is the correlation between them. With this optimal hedge ratio, the maximal amount of risk reduction is achieved:

$$\text{Maximal risk reduction} = 1 - \sqrt{1 - \rho^2}$$

From this equation we can see that if the achieved level of risk reduction is 40% then this corresponds to a negative correlation of *at least* 80% (note that the correlation may be higher than 80% in order to generate the same degree of risk reduction if the hedge ratio is not optimal). Similarly, a risk reduction of 56% corresponds to a negative correlation of at least 90%, and a risk reduction of 69% corresponds to a negative correlation of at least 95%. Hence effectiveness can also be evaluated by measuring the hedge ratio and the correlation associated with the hedging relationship.

Accounting effectiveness should in principle be evaluated in exactly the same way as economic

effectiveness, and both IAS 39 and FAS 133 provide scope for doing so. However, the reasons why accounting effectiveness is not always the same as economic effectiveness are related to three characteristics of the accounting standards:

- ☐ Only certain types of hedge relationships are allowed to be designated as hedges under the standards.
- ☐ The arbitrary choice of thresholds for hedges to be considered “highly effective”.
- ☐ The fact that accounting effectiveness must always be measured in terms of “fair value”.

The conflict that sometimes arises between economic and accounting effectiveness results can largely be traced back to these three characteristics. These are what give rise to the lack of alignment discussed above.

Nevertheless provided a highly-effective economic hedge is a qualifying hedge under the accounting standards, and provided it is appropriate (from an economic perspective) to measure hedge effectiveness in terms of fair value, then economic effectiveness and accounting effectiveness should be evaluated in exactly the same way. In this case furthermore, unless the effectiveness thresholds are unreasonably high, the result of a properly-designed accounting effectiveness test should be the same as that of the corresponding economic effectiveness test. Hence, corporations and auditors should be guided by economic effectiveness when designing appropriate hedge effectiveness tests under IAS 39 and FAS 133. This is discussed further in Chapter 5.

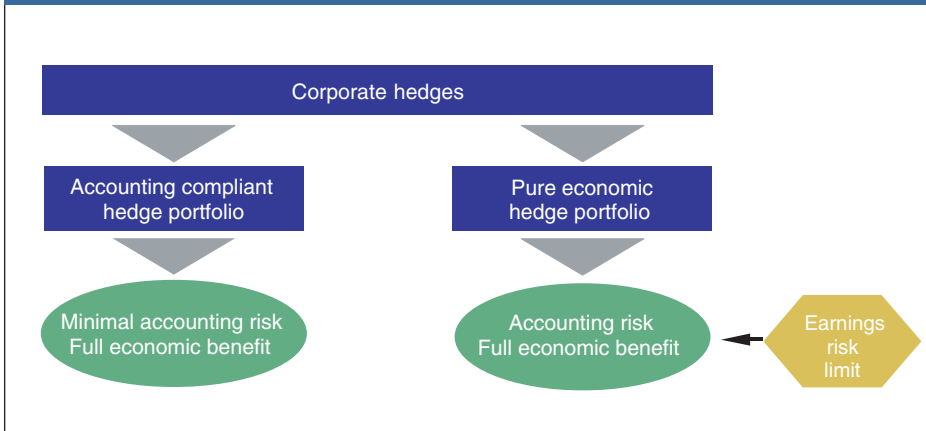
4.3 The new paradigm

Economic volatility versus accounting volatility

Faced with the lack of full alignment between accounting effectiveness and economic effectiveness, corporations have three choices in reviewing their risk-management strategy:

- ☐ Not to hedge, thereby accepting the economic risks, but avoiding any accounting volatility

Figure 4.1: The new paradigm for corporate risk management



- To hedge in the optimal economic way and accept the volatility in earnings coming from those hedges that do not get hedge accounting treatment.
- To hedge in a limited fashion only where hedge accounting treatment can be obtained, thereby avoiding additional earnings volatility and reducing just a limited amount of the economic risks.

- A portfolio of “accounting-compliant” hedges: Derivatives that qualify for hedge accounting treatment and for which effectiveness must be verified.
- A portfolio of “pure economic” hedges: Derivatives that are considered purely economic hedges, that don’t qualify for hedge accounting treatment and whose contribution to earnings volatility must be measured, monitored and managed.

Where hedge accounting treatment is not available, the decision whether to hedge or not is a choice between accepting accounting volatility or economic volatility. For most corporations the optimal choice will involve a trade-off between the economic and the accounting impact. In order that rational risk-management decisions can be made, the economic and accounting risks and benefits need to be quantified so that the trade-offs can be evaluated.

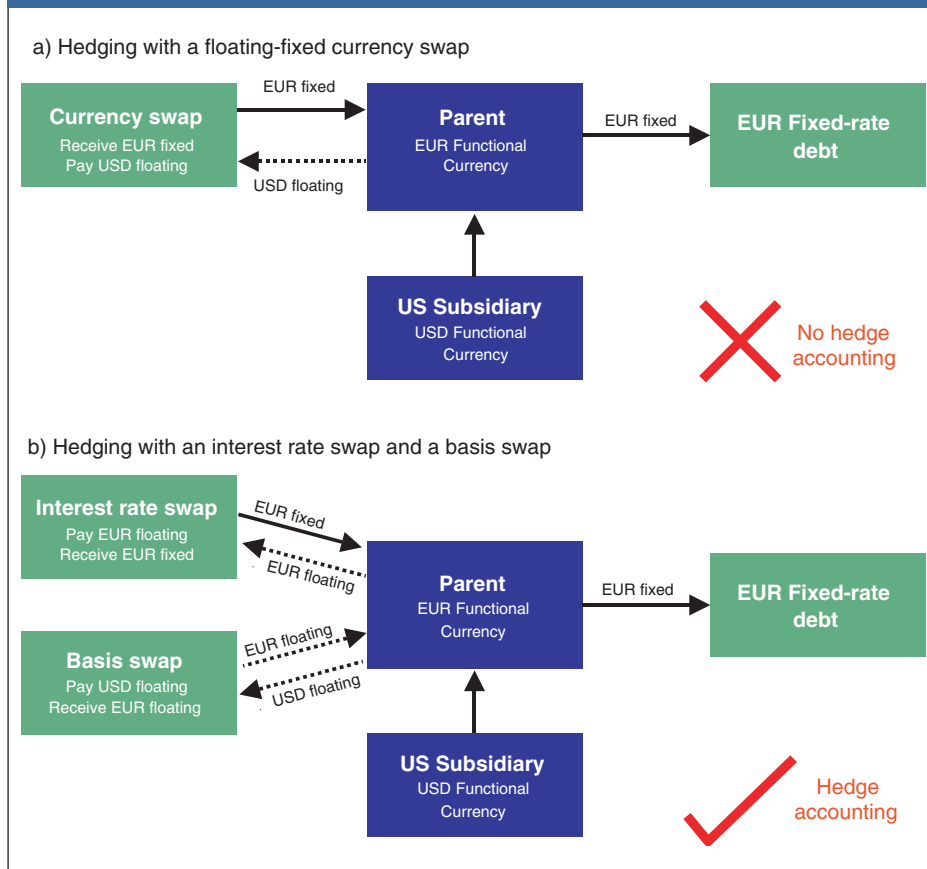
Separating hedges into two categories

An important implication of this is the need for corporations’ hedging instruments to be split into two separate portfolios. This concept was first discussed in Coughlan, Kolb and Emery (2003) and Coughlan (2003). It is illustrated in Figure 4.1:

For hedges that fall into the first category hedge effectiveness must be evaluated and monitored as we have discussed. However, derivative hedges that fall into the second category are effective economic hedges but the accounting statements do not recognise this. These hedges should be managed taking account of their economic benefit versus their contribution to overall earnings volatility on a portfolio basis. Corporations that aim to maximise shareholder value will manage these hedges by defining overall risk monitoring limits for earnings volatility for the entire portfolio of pure economic hedges.

The “earnings-at-risk”, or EaR, associated with this portfolio will then be managed within the specified risk monitoring limits. This is similar to how banks use value-at-risk limits to

Figure 4.2: Two economically equivalent hedging strategies. The hedge in (a) does not get hedge accounting treatment under IAS 39, but with the appropriate designation the hedge in (b) does



manage their mark-to-market portfolios, except that the focus for corporations will not be on daily value-at-risk, but rather on quarterly or annual earnings-at-risk.

Communicating with investors

Because hedges that fall into the “pure economic” hedge portfolio give rise to earnings volatility that does not reflect the true economic risks, it is important that investors and analysts understand

why this is the case. Corporations, therefore, must clearly communicate their risk management strategy, the economic rationale underlying it, and the management control environment around their hedging activities.

4.4 Portfolio of “accounting-compliant” hedges

Derivatives that qualify for favourable hedge accounting treatment, and have passed hedge

effectiveness tests, fall into the portfolio of accounting-compliant hedges. Their contribution to earnings volatility should be very low, while at the same time they provide significant economic benefits.

In implementing their risk-management strategy, corporations should in general try to get as many of their hedges as possible into the accounting compliant hedge portfolio. The two hurdles that must be surmounted to do this are hedge designation and hedge effectiveness testing.

The importance of hedge designation

The first hurdle – the “designation” of the hedging relationship – involves verifying that the hedging relationship qualifies under the accounting standard. To do this corporations must:

- ☐ Verify that the underlying hedged item is a qualifying hedged item.
- ☐ Verify that the hedged risk is a qualifying risk.
- ☐ Verify that the hedging instrument is a qualifying hedging instrument.

Careful designation of the hedging relationship is important. Because the formal designation of hedges can be made in a number of different ways, thought should be given as to the most appropriate way to designate a hedge. The obvious designation is not always the best from an accounting hedge effectiveness perspective.

Consider the example of a European corporation that wishes to hedge the EUR/USD currency risk associated with its US subsidiary. A strategic optimisation of its risk profile suggested that the most appropriate hedge in economic terms involved using floating-rate USD debt to hedge the cashflow and balance sheet risks associated with forex volatility. As the US subsidiary was currently financed at the parent level by a fixed-rate EUR bond issue, the most efficient way to implement the hedge was by swapping the EUR fixed-rate liability into a USD floating-rate liability. Under IAS 39 the only way to designate a swap from a functional currency liability into a foreign currency liability and qualify for hedge accounting is as a net investment hedge of for-

eign currency assets. As the company had sufficient US dollar-denominated assets, this was the obvious designation for the cross currency swap. This is shown in Figure 4.2(a). Unfortunately however, this designation does not qualify for hedge accounting, as IAS 39 does not permit fixed-floating currency swaps as a hedging item in a net investment hedge. The solution the company settled on involved two elements, as shown in Figure 4.2(b). The fixed-floating cross currency swap was split into two trades:

- (i) a EUR interest rate swap from fixed into floating; and
- (ii) a floating-floating currency basis swap from EUR into USD.

The interest rate swap was designated as a fair value hedge of EUR interest rate risk associated with the fixed-rate EUR bond. The currency basis swap was separately designated as a net investment hedge of the USD assets. With this two-part designation this economic hedge also provided an accounting hedge of earnings. Economically, this implementation has the same effect as replacing EUR fixed-rate debt with USD floating-rate debt.

Evaluating hedge effectiveness

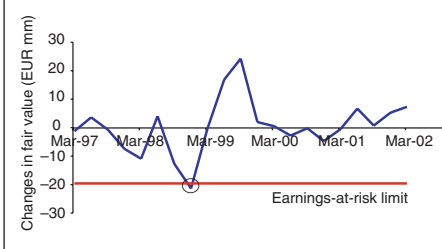
The second hurdle to getting hedge accounting treatment and therefore being able to place a hedge in the “accounting-compliant” portfolio is to verify that the hedge is “highly effective” in accounting terms. This requires designing a suitable hedge effectiveness test and then evaluating effectiveness on both a retrospective and a prospective basis.

In Chapter 5 we discuss in detail the design of hedge effectiveness tests. For more detail see the HEAT Technical Document (Coughlan, Kolb and Emery (2003)).

4.5 Portfolio of “pure economic” hedges

Derivatives that provide a real economic benefit, but for some reason do not qualify for hedge accounting treatment, fall into the second port-

Figure 4.3: Changes in fair value of the portfolio of pure economic hedges compared with an earnings-at-risk limit



folio of pure economic hedges. Changes in the fair value of these derivatives will directly impact corporate earnings. These hedges should be measured, monitored and managed separately, taking account of both their economic benefit and their marginal contribution to overall earnings volatility.

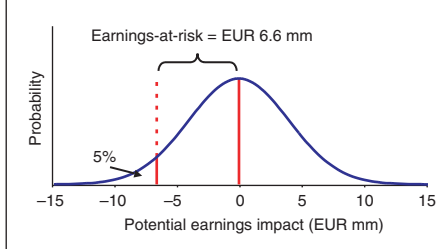
More specifically economic hedges should be managed on a portfolio basis by defining overall monitoring limits for earnings-at-risk across the entire portfolio (see Figure 4.3). In this way, the aggregate contribution to earnings volatility is controlled while the hedges are still able to deliver their economic benefits. This approach is already being adopted by some leading corporations and is very similar to the way in which banks use value-at-risk limits to control their marked-to-market risk.

As they become more comfortable with this approach value-maximising firms will not avoid pure economic hedges simply because they do not get hedge accounting treatment. Instead they will take full advantage of the economic benefits, but at the same time control and manage the accounting volatility within well-defined monitoring limits.

Measuring and managing earnings risk

Earnings risk reflects the uncertainty in reported earnings, particularly on the downside. It can be measured in many ways, but earnings-at-risk is a particularly useful and intuitive way of measuring it. EaR can be defined as the worst case under-

Figure 4.4: EaR reflects the worst case outcome with say a 95% confidence level. Only 5% of outcomes should be worst



performance in earnings with a given confidence level (say 95%). This means that an underperformance of this magnitude or greater would only be expected one quarter in 20, ie, 5% of the time (see Figure 4.4). Hence EaR is defined in an entirely analogous way to VaR.

In the context of IAS 39 and FAS 133, the reported earnings for any period must reflect the change in fair value (essentially the change in marked-to-market value) of all derivatives that do not qualify for hedge accounting treatment. Evaluating the EaR for such hedges involves measuring the range of possible changes in marked-to-market value over the period, relative to what is expected, and then identifying the 95% worst case outcome. Note that this is not the same as the VaR of the derivatives. VaR reflects the uncertainty in value, whereas EaR in this context reflects the uncertainty in changes in value.

Once the EaR of the portfolio of pure economic hedges has been measured, it needs to be compared against a suitable risk monitoring limit that has been set in the corporate risk management policy. Risk limits can be difficult to decide on, but should take account of the following:

- ☐ The corporate credit rating effectively reflects a certain maximal level of risk for the company overall in solvency terms.
- ☐ The historical hedging policy of the company reflects a level of risk it has been comfortable running in the past.
- ☐ Materiality with respect to the level of earnings.

- The accounting volatility generated by highly-effective economic hedges has no economic basis, and this may be taken into account by analysts and investors, provided the rationale for hedging has been well reasoned and clearly communicated.

The risk perspective associated with these observations provides a context in which to set an appropriate and consistent earnings-at-risk monitoring limit.

4.6 Summary

The fact that under IAS 39 (and FAS 133) accounting for hedges is not fully aligned with the underlying economics has provided a new challenge for corporate risk managers. We have argued that corporations should not necessarily avoid hedges that do not qualify for hedge accounting treatment, provided such hedges bring real economic benefits. As such these “pure economic” hedges should form a part of the risk management strategy of all value-maximising firms.

In this chapter we have articulated a new paradigm for corporate risk management in which corporations should:

1. Separate hedges into two portfolios: A portfolio of “accounting-compliant” hedges and a portfolio of “pure economic” hedges.
2. Maximise the number of hedges that fall into the accounting compliant portfolio through careful designation of the hedging relationship and careful design of the associated hedge effectiveness test.
3. Set an appropriate earnings-at-risk monitoring limit for the portfolio of pure economic hedges.
4. Measure, monitor and manage the risks of the pure economic hedges on a portfolio basis, relative to the earnings-at-risk limit.
5. Communicate clearly and transparently to investors and analysts the corporate risk management control environment and strategy, especially the policy for pure economic hedging and its rationale. ■

HEAT™: A framework for evaluating hedge effectiveness

5.1 Introduction

While it appears straightforward in theory, evaluating hedge effectiveness under IAS 39 and FAS 133 is fraught with pitfalls. The implementation guidance provided by the standards is limited, and even accountants admit that the practical development and interpretation of appropriate hedge effectiveness tests is far from clear cut. Furthermore, seemingly minor aspects in the design of the tests can have a significant impact on hedge effectiveness results. Corporations must therefore design their hedge effectiveness tests carefully to ensure that the economic reality of the hedging relationship is aligned as closely as possible with the accounting requirements.

In order to help corporations circumvent these pitfalls and address the challenges provided by the accounting standards, JPMorgan has published HEAT™ – “*Hedge Effectiveness Analysis Toolkit*” (see Coughlan, Kolb and Emery (2003)). HEAT provides a publicly-available framework to help corporations navigate the complexities of hedge effectiveness and hedge accounting. Its purpose is to guide corporate risk management strategy towards a more appropriate balance between economic and accounting performance in order to maximise financial flexibility and shareholder value.

The reasons for publishing HEAT in the public domain are to raise awareness of the issues connected with hedge effectiveness testing, and to improve the communication between corporate treasuries, accountants, auditors and investment banks. HEAT is the product of interactions with and input from many different corporations, auditors and accountants on risk management and accounting issues connected with the new accounting standards over many years. It is not a prescriptive approach that proposes just one methodology, but rather an open and flexible framework that encompasses alternative methodologies to address the wide range of different

hedging situations. Furthermore, HEAT will continue to evolve to embrace new methodologies and new types of analysis to fit the changing risk management needs of corporations, as well as future changes in accounting standards.

5.2 The challenges of designing appropriate hedge effectiveness tests

In order to qualify for hedge accounting, and thereby avoid unwanted earnings volatility, a derivative must be formally designated as a hedge at its inception and (except in strictly limited circumstances under FAS 133) the effectiveness of the hedging relationship must be regularly evaluated and verified with a numerical effectiveness test.

However, putting hedge effectiveness testing into practice is not straightforward for several reasons. First, the accounting standards provide considerable flexibility in how hedge effectiveness tests are designed and implemented. While this leeway is essential to align the test with the company's risk management strategy, the lack of explicit implementation guidance provides insufficient direction for all but the most sophisticated corporations. Secondly, the high level of complexity attached to the standards, together with considerable uncertainties concerning implementation and interpretation, have made it difficult to identify hedge effectiveness methodologies that are consistent with the accounting standards and yet still sensible in economic terms. Third, it is easy to end up with inappropriate effectiveness tests by overlooking small, but significant, elements in the testing methodology.

5.3 The HEAT framework

The HEAT framework, in line with the need for flexibility acknowledged by IAS 39 and FAS 133, incorporates alternative methodologies for evaluating hedge effectiveness. This allows corporations to select the methodology best fitted to

particular hedging situations and their corporate risk management strategies. It provides guidance on the following issues:

- ☐ How to approach hedge effectiveness.
- ☐ How to select an appropriate effectiveness methodology.
- ☐ What are the pitfalls that need to be avoided?
- ☐ Is hedge accounting necessary?
- ☐ Does the economic benefit of hedging outweigh the accounting impact?

The “ideal designated-risk hedge”

A key element in the HEAT framework is the concept of the ideal designated-risk hedge (IDRH). The IDRH is the perfect (or ideal) hedge of a particular underlying hedged item with respect to a designated risk. Note that the IDRH is essentially the same concept as the so-called “hypothetical derivative” described by the standards in the context of cashflow hedges. It is however a more general concept.

The IDRH plays a vital role in validating the economic appropriateness of different hedge effectiveness methodologies. If under a given methodology for hedge effectiveness the IDRH gives a low effectiveness result, then that methodology is likely to be flawed from an economic perspective. Hence the IDRH is a practical tool to help guide the selection of an appropriate methodology for hedge effectiveness testing. It is also a benchmark against which the relative costs and risks of alternative strategies can be compared.

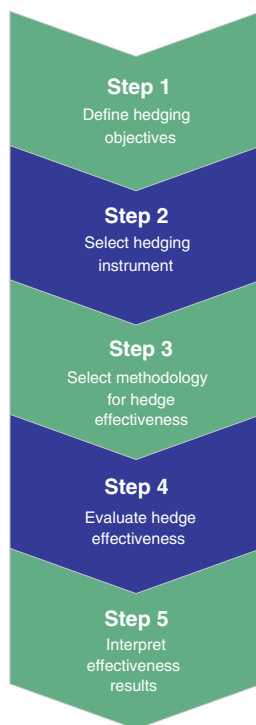
The five framework steps

The HEAT framework has five main steps (see Figure 5.1), which can be applied to any hedging application. The framework provides a structure upon which to implement a coherent and appropriate programme for assessing the effectiveness of different kinds of hedges. Although it has been motivated by the accounting standards, it is based on very general principles and incorporates a significant amount of flexibility.

Hedge designation

Step 1 in the HEAT framework involves careful

Figure 5.1: The HEAT framework



definition and documentation of hedging objectives. This includes defining first the underlying hedged item and then the designated risk to be hedged. A clear specification of the designated risk is particularly important, involving four main elements:

- **Performance metric:** eg, fair value or cashflow
- **Risk class:** eg interest rate risk, foreign exchange risk, commodity price risk, etc.
- **Amount of underlying hedged:** How much of the underlying exposure is being hedged?
- **Desired risk characteristics:** This refers to the risk characteristics that are desired after hedging. For example, for a fair value hedge of

interest-rate risk, the desired risk characteristics might be 3-month Libor, or 6-month Libor-in-arrears, etc. For a cashflow hedge of foreign exchange risk, the desired risk characteristics might be to eliminate the full impact of exchange rate movements, or alternatively to eliminate the impact of the exchange rate movements above a specified level.

Step 2 involves defining the hedging instrument and the hedge ratio. The hedge ratio determines how many units of the hedging instrument are used to hedge one unit of the underlying. Ideally, one should select the optimal hedge ratio, corresponding to the maximal reduction in risk, as discussed in Chapter 4.

Effectiveness methodologies

Step 3 involves selecting a methodology for evaluating hedge effectiveness. This is in many ways the most important and challenging step in the framework, since an inappropriate choice of methodology can lead to spurious and misleading hedge effectiveness results. The choice of methodology comprises seven different dimensions:

1. **Reference exposure:** Should the hedging instrument be compared to the underlying hedged item or to the Ideal Designated-Risk Hedge (IDRH)?
2. **Fair value approach:** How should changes in fair value be evaluated? Use the full MTM value? Exclude accrued interest? Exclude changes in credit spread? Exclude forward premium? Etc.
3. **Historical data to be used:** How much history? What data frequency and how many data points?
4. **Method of applying historical data:** How should historical data be used to create prospective or retrospective scenarios?
5. **Maturity treatment:** Should one keep the maturities constant or allow the maturities to ‘roll’, ie, fall over time?
6. **Basis for comparison:** Should one use cumulative changes or period-to-period changes in fair value?

7. **Type of effectiveness test:** Regression test, or dollar-offset test, or risk reduction test, or another type of test?

Changing any one of these corresponds to a different methodology and changes the nature of the effectiveness test. For example, the choice of fair value approach can make a huge difference to test results. Even for the very simple case of a plain vanilla interest-rate swap providing a fair value hedge of the interest-rate risk on a fixed-rate bond, the choice to include or exclude accrued interest can make the difference between passing and failing the test.

Choosing different “types” of effectiveness tests can also lead to conflicting test results. In particular, the simplest and most widely discussed type of test, the so-called “dollar-offset” test, produces many more fail results than other types of test, such as regression and risk reduction, even for very highly correlated hedges. This high frequency of fails reflects the known extreme statistical properties of the test and inevitably leads to conclusion that the dollar-offset test is fundamentally flawed. See Canabarro (1999).

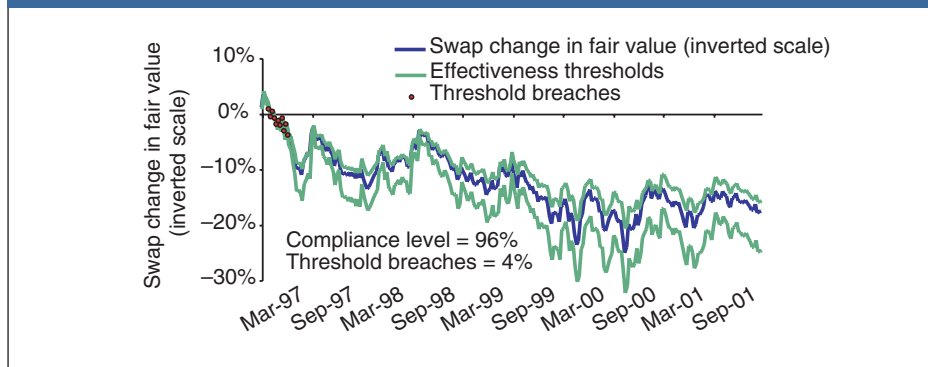
Different combinations of these seven choice dimensions are appropriate for different hedging situations, and the HEAT Technical Document provides guidance in making relevant choices.

Step 4 in the HEAT framework is the implementation step, which means actually evaluating the effectiveness test, as defined by the methodology selected in the previous step. This step is conceptually very simple, but it is typically extremely time-consuming to perform. It involves first using historical data to generate scenarios for prospective and/or retrospective testing, then evaluating the changes in fair value in each scenario, and finally actually performing the test.

Effectiveness relative to thresholds

Step 5 in the HEAT framework is one of interpretation. The effectiveness results need to be interpreted in the context of the hedging objectives set out in Step 1. This interpretation is usually facilitated by defining “effectiveness thresholds”, which provide an easy translation of the numerical

Figure 5.2: Dollar-offset test results for case study 1



results into a “pass” or “fail” signal. Different types of tests have different types of thresholds. Note, however, that the linkage between effectiveness thresholds and the true level of effectiveness of a given hedge is highly dependent on the effectiveness methodology, in particular, how much historical data is used, and what type of test is being performed. Hence caution needs to be exercised in setting appropriate threshold levels for different tests in different hedging situations.

5.4 Case study 1: Hedging a foreign bond issue

A European corporation wanted to hedge the interest rate risk and forex risk on a foreign currency bond issue. In addition to designating the hedge and documenting the hedging objectives, the company must conduct effectiveness tests on an ongoing basis. This includes a retrospective effectiveness test to demonstrate that the hedge has actually been highly effective in the past, along with a prospective test to show that it is expected to be highly effective in the future. Here we describe a retrospective test conducted in March 2002 towards the end of the hedge.

The underlying hedged item is a GBP 100 million five-year fixed-rate bond with a coupon of 7.29% issued on March 5, 1997 and maturing on March 5, 2002. The designated risk is defined as follows:

- Performance metric: Fair value.
- Risk class: Forex risk and interest-rate risk.
- Amount of underlying hedged: 100% (ie, GBP 100mm).
- Desired risk characteristics: EUR 6-month Libor.

The hedging instrument is a five-year cross currency swap whose receive leg has a fixed-rate coupon of 7.29% in GBP with the same terms as the bond, and whose pay leg has a floating rate coupon in EUR linked to 6-month Libor. The swap has a fair value of zero at inception. The hedge ratio is 100%, meaning that the company is hedging the GBP 100 million bond with a swap notional of GBP 100 million on the receive leg.

The methodology used for evaluating hedge effectiveness on this retrospective basis is defined as follows:

1. **Reference exposure:** The underlying bond.
2. **Fair value approach:** Full marked-to-market value, excluding changes in credit spread of the bond. The bond is valued using the swap curve plus the initial credit spread at the time of inception of the hedge.
3. **Historical data to be used:** Actual market data for GBP and EUR interest rates (swap rates) and for the GBP/EUR exchange rate between

Figure 5.3: Regression test results for case study 1

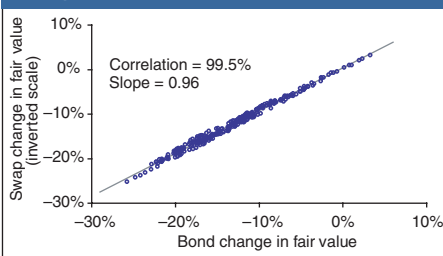
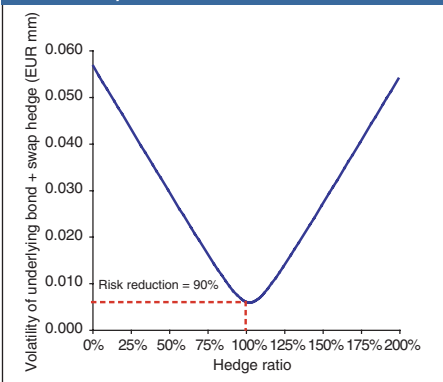


Figure 5.4: Risk reduction test results for case study 1



March 5, 1997 and March 5, 2002, with a weekly data frequency.

4. Method of applying historical data: Use actual past data directly, as this is a retrospective test.
5. Maturity treatment: Rolling maturities for bond and swap.
6. Basis for comparison: Cumulative changes in fair value.
7. Type of effectiveness test: Three types of test are used: dollar-offset method, regression analysis, and the risk reduction method.

To interpret the results of the tests the following effectiveness thresholds were applied:

- Dollar-offset test: Ratio threshold range 80% to 125%, compliance threshold 80%.

- Regression test: Correlation threshold 80% to 100%, slope threshold 0.8 to 1.25.
- Volatility reduction test: Risk reduction threshold 40% (equivalent to a correlation of at least 80%).

Note that the compliance threshold for the dollar-offset test is discussed in the HEAT Technical Document (see Coughlan, Kolb and Emery, 2003, p. 41). It is required so that the dollar-offset test is not completely unrealistic.

All three effectiveness tests produce consistent pass results for this hedge, relative to the defined effectiveness thresholds. The dollar-offset test results are shown in Figure 5.2. Over almost the entire range the actual change in fair value of the swap is within the effectiveness thresholds. In fact the level of compliance with the thresholds is 96%. Only in the period between April and June 1997, where the changes in fair value of the underlying bond are small, are the thresholds breached. The regression analysis is shown in the scatter plot in Figure 5.3. The tight spread of points around the regression line reflects the observed high correlation of 99.5% and a slope of 0.96. Finally, the risk reduction test results are shown visually in Figure 5.4, where it is clear the hedge provides a very high level of risk reduction of 90%. On the basis of these results, the hedge should be considered “highly effective” and the swap should qualify for hedge accounting treatment.

5.5 Case study 2: Hedging interest rate risk

A UK corporation wanted to enter into a fair value hedge of the interest rate risk on a fixed-rate sterling bond issue. Here we describe a retrospective effectiveness test conducted in early 2002. The underlying is a five-year bond paying a semi-annual fixed coupon of 7.29% issued on March 5, 1997. The corporation is a Libor-flat issuer and the bond has zero credit spread. The hedging instrument is a plain vanilla interest rate swap with the same maturity and notional as the bond, paying 6-month Libor and receiving a fixed-rate coupon of 7.29%. The terms of the fixed rate leg of the swap precisely match the terms of the bond.

Intuitively, this swap should constitute the perfect fair value hedge of the interest rate risk on the bond. The swap is essentially the IDRH for this bond with respect to interest rate risk. Moreover, it qualifies for “shortcut” treatment under FAS 133. The details of the chosen effectiveness testing methodology are summarised below:

1. **Reference exposure:** The underlying bond.
2. **Fair value approach:** Full marked-to-market value, excluding changes in credit spread of the bond. The bond is valued using the swap curve flat.
3. **Historical data to be used:** Actual market data for GBP interest rates (swap rates) between March 5, 1997 and March 5, 2002, with a weekly data frequency.
4. **Method of applying historical data:** Use actual past data directly, as this is a retrospective test
5. **Maturity treatment:** Rolling maturities for bond and swap.
6. **Basis for comparison:** Cumulative changes in fair value.
7. **Type of effectiveness test:** Regression analysis. Correlation threshold: 80% to 100%. Slope thresholds: 0.8 to 1.25.

Despite this swap being the intuitively perfect hedging instrument, this hedge actually fails this test! As shown in Figure 5.5, the test yields a correlation result of 86%, which is within the correlation thresholds, but the slope result of 0.68 is well outside the thresholds. A perfect hedge should have a correlation of 100% and a slope of 1.00, so what has gone wrong?

The answer lies primarily in the accrued interest on the floating leg of the swap (see Figure 5.6). Since the fixed leg of the swap and the bond match precisely, the only difference between the underlying and the hedging instrument is the floating swap leg. Using weekly data for the test means that the cumulative change in fair value includes a large change in accrued interest associated with the floating swap leg from week to week that leads to considerable “noise” in the changes in fair value of the swap.

If the effectiveness test is repeated with the fair

Figure 5.5: Regression test results for the “perfect hedge” in case study 2

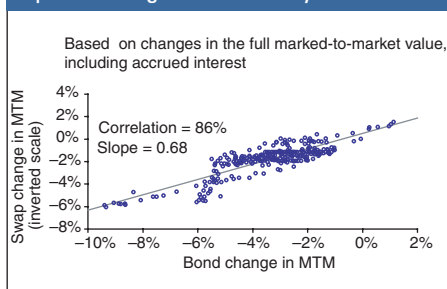
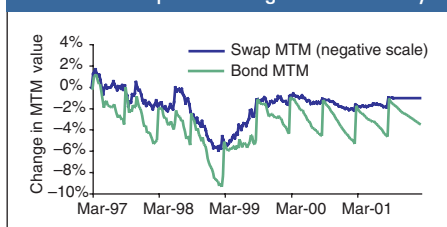


Figure 5.6: Changes in marked-to-market value for the “perfect hedge” in case study 2



value approach modified so that changes in fair value exclude accrued interest, we get a much more intuitive result. In this case the new methodology gives a correlation of 99.99% and a slope of 1.01, which is a clear “pass” result consistent with intuition. (The results are not exactly what we would expect for a perfect hedge because there is still some noise in the valuation of the floating leg of the swap due to the fact that it does not value to par on dates other than coupon reset dates).

Lessons for fair value interest rate hedges

In order to maximise the chances of passing any effectiveness test for a fair value hedge of interest rate risk, it is advisable to follow the following guidelines, provided auditors agree to sign off on the methodology. See the HEAT Technical Document (Coughlan, Kolb and Emery (2003)) for more details.

First, exclude accrued interest from the calculation of changes in fair value. There are a number of justifications for this:

- (i) Accrued interest is not a risk-based quantity, but due to the passage of time.
- (ii) A fair value hedge of interest rate risk is implicitly only hedging the fair value of the bond on reset dates for the floating-rate coupon, as this is the only time at which the fair value is exactly par. On coupon reset dates the accrued interest is zero.
- (iii) When using test data that has a higher frequency than the frequency of financial reporting dates, significant additional noise will be introduced into the effectiveness test through the accrued interest. This noise is almost entirely a consequence of the choice of data frequency not the underlying risk.

In our experience most auditors accept that these are valid reasons to exclude accrued interest in the way we propose, but it is always advisable for corporations to check with their particular audit partner.

Second, where possible use the “portions” principle discussed in Chapter 1. This can be used to exclude the component of the bond coupon that corresponds to its spread over the swap curve at the inception of the hedge. In effect, this means using the prevailing swap rate at the inception of the hedge, as the fixed-rate coupon on the bond for all effectiveness testing. This is the best way to ensure an intuitively perfect hedge does not fail the test when there is either a large credit spread on the bond and/or the swap curve has moved very significantly

between the issuance of the bond and the inception of the hedge.

Third, if “portions” is not available (as is the case under FAS 133), then an alternative is for the bond to be priced using the swap curve plus the (fixed) initial spread of the coupon over the swap curve at the inception of the hedge. This ensures that the bond prices to par at the inception of the hedge. If this is not done, then the bond price at inception of the hedge could be very different from par, leading to a trend back to par over the life of the bond. This trend can otherwise sabotage the effectiveness test result.

5.6 Summary

The ultimate objective of hedge effectiveness testing is to ensure that hedging instruments are appropriate and play a valid role in reducing risk. Even if hedges are not considered effective from an accounting viewpoint, they should always be effective from an economic perspective. HEAT provides a framework that helps corporations develop a consistent, practical and intuitive approach to hedge effectiveness testing, which can be applied to both accounting and economic hedges. A poorly designed test is worse than no test at all, since it is likely to produce misleading results and lead to inappropriate risk-management behaviour. By carefully designing the methodology for hedge effectiveness testing the accounting impact of many derivative hedges can be aligned as closely as possible to the economic benefits of hedging. ■

Preparing for IAS 39

6.1 Introduction

Preparing for IAS 39 – just another transition to a new accounting standard or a mountain of systems adaptation and staff training requirements?

As companies prepare to adopt IAS 39 for the first time, there are a number of areas that the entities will need to consider. As when any new accounting standard is issued, the entity needs to take appropriate steps to ensure that the standard has not only been applied correctly, but that it continues to be applied correctly and that this application is auditable.

Preparations for the adoption of IAS 39 cannot be done in isolation of other accounting standards – IAS 32 will need to be considered, as well as the interaction of these two standards with the other IFRSs. Figure 6.1 details the processes to consider when adopting the standards. Assuming implementation in 2005, then at this point in the timeline, most entities should be well into Phase 3 and should be implementing strategies and solutions in order to be IFRS compliant.

This chapter will address some of the issues that will require the most consideration in terms of planning and resourcing, and how to manage the process as smoothly as possible. It will primarily consider the requirements for hedge accounting in the context of corporate risk management.

In adopting IAS 39, one must decide whether to use trade date or settlement date accounting; how various instruments will be classified; and whether the entity should apply basis adjustments to the recognition of non-financial items when hedged. Although the above decisions will require careful thought, each corporation should take this opportunity to consider some of the wider aspects of adopting the standard, and to iron out any “GAAP” differences between different reporting entities within the group, as well as to re-assess functional currencies.

Although these are all aspects of making the move to applying IFRS, one of the most significant parts of applying IAS 39 is hedge accounting. Hedge accounting is deemed to be a privilege and therefore the ability to achieve hedge accounting under IFRS is governed by strict requirements. However, with the introduction of IAS 39, entities are likely to consider both the economic rationale and the accounting implications of their decisions.

6.2 Review of risk management policy

The risk management policy of an entity is essential to correct application of IAS 39. The risk management policy should be broader than simply what procedures and processes are in place for hedging certain transactions. It should also consider:

Figure 6.1: Processes to consider when adopting IAS 39



Source: Deloitte & Touche LLP

- ☐ The entity's approach to obtaining fair values.
- ☐ The instruments that the entity can use to hedge with.
- ☐ If hedging is undertaken, whether hedge accounting will be applied.
- ☐ How entering into hedging relationships will be documented.
- ☐ What types of hedge accounting are applicable and when.
- ☐ How the entity will assess effectiveness for each type of hedge relationship.
- ☐ What limits and parameters the entity will use to determine whether a hedge has been effective or not.

This is on top of all existing policy decisions such as the size of transactions that need to be hedged and limits on instruments and exposures.

Once one has determined whether or not hedge accounting is applicable, then the standard requires that the hedge relationship is sufficiently documented and aligns with the entity's risk management strategy.

Overall the key requirement is for the hedge accounting strategy to align with the risk management strategy.

6.3 Documentation

The standard is specific about the timing and types of documentation required for an entity to apply hedge accounting. These requirements are detailed here in bullet point form and discussed in greater detail below. [IAS 39.88]

- ☐ Formal documentation of the hedging relationship.
- ☐ Formal documentation of the risk management objective and strategy for undertaking the hedge.
- ☐ Identification of the hedged item.
- ☐ Identification of the hedging instrument.
- ☐ The nature of the risk being hedged.
- ☐ How the entity will assess effectiveness.

The standard requires that this documentation is in place at inception of the hedge. For hedges already existing at the date of transition to IFRS,

the documentation must be in place at this date. This point will be considered further below, but demonstrates that not only must the risk management policy exist, but that the systems and processes are in place before hedge accounting is applied. These systems and processes will need to ensure that, whenever a transaction is entered into in the belief that it is a good "economic" hedge and that hedge accounting will be sought, then the entity has a sufficiently robust approach in place to meet the requirement of IAS 39.

The documentation must state its objective and the strategy adopted to mitigate the risk identified. This should be consistent with the risk management policy document. Both the hedged item and the hedging instrument will need to be identified. This sounds simple, but what does it entail in practice? Firstly, it should consider whether or not the instruments qualify for hedge accounting in the first place. An example of this would be if the hedging derivative contained an embedded written option, which is not considered an effective hedging instrument within IAS 39. As a result that hedging derivative cannot in itself be considered an eligible hedging instrument except in certain specific circumstances. [IAS 39.AG94]

IAS39 is flexible in terms of the risks that can be designated. For example, if an entity issues a fixed rate debt instrument and enters into a vanilla interest-rate swap to hedge the fair value risk on the bond due to changes in the underlying rate of interest (Libor), then the entity can decide what risk is being designated as hedged. In other words, the entity could either hedge the full contractual cashflows on the bond in relation to changes in interest rates, or the entity could choose to hedge only the portion of the fair value that arises on the Libor element of those cashflows. Whatever designation the entity chooses, it must be consistent with the risk management strategy and specifically documented for the given hedge relationship. It should be noted that careful designation of the risk being hedged could improve the effectiveness of the hedging relationship.

The last point to be included in the documentation relates to how the entity will assess hedge

effectiveness. The method an entity adopts will depend on several factors including the nature of the hedge, the sophistication of the entity in terms of skills and systems and the volume of hedging transactions that the entity might consider. The standard does not stipulate which method the entity adopts, but requires the method to be aligned with the risk management strategy. [IAS39.AG107]

So how does an entity ensure that the hedge is sufficiently and accurately documented?

6.4 Data capture and systems

Data capture encompasses several aspects. Not only will an entity most likely have to obtain fair values for some of its derivative exposures for the first time, but the entity will also have to be able to record those changes in value within their systems. This data capture will be required as often as an entity reports so that it can reflect the appropriate values of financial instruments held at each reporting date.

As far as data capture is concerned, valuation is really the key driver. Has the entity considered whether or not it will obtain external valuations or whether it will use external data to perform valuations itself? If it is the latter, the entity must assess whether or not the system will be manual or automated, whether or not the system is sufficiently flexible to be used by a wide range of personnel, or indeed whether only Treasury staff with sufficient knowledge of the instruments should use the system.

The key issue at this stage is determining if the entity intends to move from the underlying accounting and reporting framework (including management accounts) to reporting within an IFRS compliant framework.

As far as the systems are concerned, the usual approaches to new systems still apply. For example, a parallel run under both existing GAAP and IFRS would be appropriate. Has the entity considered whether or not the IT infrastructure is sufficiently robust and flexible to support two systems running side by side?

The systems issue is relatively complex. Depending on the nature of the hedging transac-

tion (be it cashflow, fair value, or the hedge of a net investment in a foreign entity) the entity must be able to track items appropriately. For example, in a fair value hedge, the adjustment to the carrying value of the hedged item in a fair value hedge will need to be monitored, or in a cashflow hedge the release of deferred fair value gains and losses on derivatives that have been retained in equity will need to be correctly tracked.

How will the systems be applied to asset and liability classification? Will the General Ledger classifications be used to drive the measurement of the assets?

Another issue is the treatment of embedded derivatives, which are not considered to be closely related to the host contract. These derivatives will have to be bifurcated and separately marked-to-market unless the entire compound instrument is measured at fair value through profit and loss. This will result in two different systems requirements. The first is that the system will have to cope with recording the derivative at fair value and report the respective gains and losses on that derivative in the income statement. The second is that the carrying value of the host contract will need to be adjusted to ensure that the carrying value of the instrument at redemption is the appropriate one (usually par) via the effective interest rate method.

Many IT systems have not traditionally been able to calculate the effective interest rate on assets appropriately and adjustments have had to be calculated manually. In the new world of IAS 32 and IAS 39, this may be harder to do on a manual basis, as the effective interest rate calculation may apply to more financial instruments than under historic GAAP.

Will the systems be able to calculate effectiveness and ineffectiveness appropriately and in accordance with the entity's documented risk management strategy and policy?

6.5 Hedge effectiveness

The entity itself must determine the method of assessing hedge effectiveness as the standard does not specify how the assessment should be made. Further, the entity should ensure that the

method chosen is consistent with its risk management strategy.

Whichever method an entity adopts, it will have to justify the parameters that it has chosen, and ensure that they are in line with the requirements of IAS 39. The standard requires that on a prospective basis there is an expectation that the change in fair value or cashflow of the hedging instrument will “almost fully offset” the change in fair value or cashflows of the hedged item. On a retrospective basis, the standard requires that the hedge has actually been “highly effective”. How the entity determines “highly effective” will be based on the 80–125% rule, which requires that the method used to assess hedge effectiveness will have to demonstrate that changes in fair value or cashflows of the hedged item have been offset by changes in fair value of the hedging instrument within an 80–125% bandwidth. This can be tested using the dollar offset method or regression analysis or another appropriate statistical method.

In assessing hedge effectiveness, the entity will need to consider whether to assess the hedge on either a cumulative or period-to-period basis. The choice between these two bases of assessment may have implications in terms of the ability to retain the right to hedge account. Whichever method the entity chooses, it will need to perform the prospective and retrospective tests at each reporting date and report any actual ineffectiveness at that point in time. The key point to note is that assessment of effectiveness is different from the measurement of actual ineffectiveness.

The systems in place will need to ensure that even when an entity concludes that it has had an historically good hedging relationship that any actual ineffectiveness is captured by the system and reported in earnings appropriately.

6.6 Dealing with auditors, accounting advisors and banks

The adoption of IAS 39 is not only a large challenge for entities, but also for internal accounting advisors, external accounting advisors and audit engagement teams. This is because there are relatively few entities that currently apply IAS 39 and therefore the standard has relatively little his-

toric application and there is little experience of application among practitioners. Furthermore, the standard is extremely complex in places and therefore demands considerable time and resources to apply it properly in practice.

In making any decisions about the application of the standard, entities should ensure that they engage in constructive dialogue with their auditors at an early stage. This includes the approach to adoption of the standard, the manner in which systems will be altered or built, as well as discussion about entering into hedging transactions. The earlier these discussions are held, the better for all parties.

An entity that demonstrates a well-documented approach to transition will be well placed to ensure that auditors gain comfort more quickly than with less meticulous counterparts. Ensuring that staff are trained in the standard and that they liaise with the audit engagement team will also facilitate clearer communication between auditor and client.

6.7 Summary

IAS 39 poses large implementation issues. Hedge accounting forms a significant element of those challenges and therefore careful attention is required in order that entities can qualify for hedge accounting upon adoption of the standard.

Whilst some aspects of assessing hedge effectiveness and reporting actual ineffectiveness appear complex, some of the other processes and procedures that are required are simpler, but still require careful thinking by management at an early stage to ensure that they are fully operational by the time first-time adoption comes round. This will ensure that an entity is in a suitable position to report in a manner that is consistent with their risk management approach.

Although the climb is tough, the view from the top is surely worth the effort. ■

Matt Read, Deloitte

Any views expressed in this chapter are solely those of the author and not necessarily representative of those of Deloitte & Touche LLP. Further the author neither expresses nor endorses any view on any other material within this publication.

What auditors are looking for in an IAS 39 audit

7.1 Introduction

In conducting an audit of IAS 39 figures, the requirements of assurance will be no different from those for other balances and disclosures within the accounts. Auditors will still have to ensure that both “potential errors” and “assertions” have been covered by the audit approach and testing adopted. As far as potential errors are concerned, validity, recording, completion, valuation, presentation and cut-off are all to be considered. Further, from an assertion perspective, the audit approach will need to cover existence, rights and obligations, occurrence, completeness, valuation, measurement, presentation and disclosure. When considering these tests, both auditors and clients may find it useful to remember the mnemonic “CAVEBOD County Cricket Club” – complete, accurate, valid, exists, benefit, ownership, disclosure, cut-off, consistent, and compliance.

Although the approach to the audit will cover the same bases, some of the areas highlighted below will require special consideration and are areas in which entities can facilitate the audit process by anticipating the needs of the auditors.

The following sections cover some of the requirements that arise when an entity is applying the hedge accounting guidance within IAS 39.

7.2 Risk management policy

From a hedge accounting perspective, one of the starting points for the engagement team will be the risk management policy documentation. This will allow the team to determine the approach to hedging that the client permits and pursues, and how each transaction should be recorded and executed.

Ensuring that the policy documentation is in place and IAS 39 compliant will assure the client that he has considered the transition to IAS and as a result has made high level changes.

The policy document will be reviewed to

ensure that where the accounting and financial reporting is concerned the non-qualifying instruments within IAS 39 are not considered for hedge accounting.

7.3 Documentation

As mentioned in the previous chapter, IAS 39 requires that each hedging relationship is appropriately documented. An entity may enter into a large variety of hedging relationships, including cashflow, fair value or hedges of net investments in foreign entities.

For each hedge, the documentation should include the following information:

■ The hedged item

This would include specifying all the terms of the instrument relevant to the hedge and will differ among hedge relationships. This may include the notional and principal amounts of the item, including the element that is being hedged, the term of the instrument, the repricing dates and coupon payment dates and the underlying basis on which the instrument was priced, eg, a 5-year debt instrument that had its coupon set based on the 3-month Libor rate.

■ The hedging instrument

Similar information to that supplied above would also be required for the hedging instrument. The terms of the instrument are crucial as these will be used in both assessing effectiveness and measuring ineffectiveness. As a result, the more commensurate the choice of derivative to that of the hedged item the more effective the hedge will be. Further, having this information readily available the quicker it will be to test the audit evidence.

■ The applicable risk designation

The more specifically a hedging relationship is defined, the more specifically the hedge effec-

tiveness can be assessed in relation to the risk being hedged and to a greater extent ineffectiveness in a relationship can be reduced. For example, an entity may make the following designation in relation to a certain hedging transaction: “The derivative is designated as a hedge of the risk of changes in fair value of the Libor/swap portion of the bond detailed above caused by changes in value of the 3-month Libor curve”. This should generally increase effectiveness compared with a designation that specifies the full contractual cashflows of the bond.

■ **The method that will be used to determine prospective hedge effectiveness**

The method needs to be consistent with the risk management strategy and should be applied consistently across similar types of hedges. At this stage, the documentation should also include the results of the testing, and the entity’s assessment of whether or not the hedge qualifies on a prospective basis for hedge accounting.

■ **The method that will be used to determine retrospective hedge effectiveness**

This method need not be applied on the same basis as the prospective hedge assessment test, but ought to be consistent again with the risk management policy document and the type of hedge in question. Again, in the documentation, the engagement team would expect to see evidence of the retrospective test and documentation and interpretation of the results.

■ **How the entity will determine actual ineffectiveness**

An entity will need to demonstrate or explain how the ineffective element has been determined. This may be evidenced by the systems that report the ineffective element that has arisen as appropriate, but the method will need to be explained so that it could be tested. An example would be in a cashflow hedging relationship where the “hypothetical derivative” method was being applied. The entity would have to explain how ineffectiveness was actually calculated and reported for the period.

■ **The risk management objective and strategy for undertaking the hedge**

This should be aligned with the risk management strategy of the entity and therefore could be as simple as referring to the appropriate strategy element within the risk management policy. Alternatively, if the hedge is within the risk management strategy document, but the hedge is a little more specific or tailored than the scenarios covered in the policy document, then further information may be required.

An entity, which has formalised standard forms for documentation that are required whenever a hedging transaction is entered into would indicate to the engagement team that the controls environment was stronger than in the case of an ad hoc and individual approach to the required documentation.

The greater the level of detail provided and the more specific the designation of the hedge and the methodology of assessment is, the easier it will be for the auditors to test the documentation and its underlying relationships.

Clients should expect to have their hedging documentation reviewed to ensure that it is complete, to ensure that the transactions themselves are valid and to ensure that the methods for assessing hedge effectiveness are appropriate. It is worth noting that an entity should apply a consistent method of assessment for similar types of hedges as it would call into question the validity of the approach applied if the entity were to “cherry pick” the method depending on the results generated by various methodologies.

Further to the above requirement for each hedge at inception, there would also be a requirement for prospective assessment of effectiveness at inception of the hedge and at each reporting date the actual retrospective assessment of effectiveness tests as well. There is no “shortcut method” under IAS 39 and therefore an audit team is likely to be on alert if a client claims that the hedging relationship will no doubt be effective because “the critical terms” of the hedging instrument and the hedged item match. The standard makes it clear, in the illus-

trative guidance, that “no ineffectiveness” cannot be assumed even when critical terms match because there are other contributors that impact the fair value of both the hedged item and the hedging instrument such as changes in credit risk of the instruments. These tests and the respective results are considered in further detail in the subsequent paragraphs.

7.4 Hedge effectiveness evaluations

Although the standard allows an entity to apply an appropriate hedge effectiveness assessment method, the entity will still need to determine the appropriate “highly effective” threshold and how the results obtained for both the prospective and retrospective tests will be interpreted.

Some practical considerations include the following. In applying the dollar offset ratio as a test, if the fair value changes of the hedged item and the hedging instrument are both small and the ratio therefore falls outside the 80–125% retrospective tests, then has the relationship failed? For example, suppose an entity has the results shown in Table 7.1 for changes in fair value of a bond and swap for the previous six months for the given designated risk.

From the table, the result at the end of October might lead the entity to conclude that the hedge relationship had failed. In reality, the absolute magnitude of the changes in the hedging instrument and the hedged item are both small in October and therefore the entity may conclude that, even though the ratio threshold has been breached, the hedge relationship is still

effective and valid. For example, if September is considered, the absolute difference in magnitude was £50,000 and the test passed, but in October, the absolute magnitude is only £10,000 and the test is deemed to have failed. One way to consider this would be to establish levels at which results of small changes in absolute value of the hedged item and the hedging instrument is removed from the test. If this approach were to be adopted, the level at which the changes were sufficiently small would have to be documented and approved by the auditors as appropriate. Clearly the judgment will be based on subjectivity and levels of materiality with respect to the transaction in question.

Further considerations in respect of how effectiveness is assessed using statistical methods would include the level of the gradient (or slope) established in a hedging relationship and the related correlation of the relationship. The entity will need to document how it will assess the statistical significance of the relationship and how the results will be interpreted with respect to the question of application of hedge accounting.

If the gradient of the changes in fair value of the hedged item and the hedging instrument was in fact close to -1 and the relationship went through the origin (ie, zero intercept), then the R-squared or correlation figure would have a greater margin for error. Conversely if the hedging relationship was one to one and the gradient was close to -0.8 or -1.25 , then the expected value of R-squared or correlation would have to

Table 7.1: Example of the “dollar offset”, or “ratio analysis” test

	Change in fair value of bond (£m)	Change in fair value of swap (£m)	Ratio (%)	Conclusion
July 31, 03	-10.20	10.00	-102.00	Pass
August 31, 03	5.00	-5.10	-98.04	Pass
September 30, 03	5.00	-5.05	-99.01	Pass
October 30, 03	0.01	0.02	50.00	Fail
November 30, 03	-11.00	10.90	-100.92	Pass
December 31, 03	7.00	7.02	99.72	Pass

be very close to 1 in order to gain comfort that the relationship will hold.

Again, the entity will have to determine what these thresholds should be and how they will be interpreted. Whichever method an entity chooses to adopt it should be sufficiently comfortable with the methodology to justify it to the auditors.

7.5 Recognition of realised ineffectiveness

The standard requires that all ineffectiveness in a hedging relationship is captured and reported immediately in earnings. The engagement team will consider how the client has assessed the ineffective element of a hedging relationship and ensure that the resulting ineffectiveness is recorded appropriately in the income statement. The entity should be able to demonstrate the process, whether systems-based or manual, of how the adjustment feeds into the general ledger.

A further point is that where cashflow hedge accounting is being applied, the entity will need to ensure that the re-cycling from equity is taken to the income statement as and when appropriate. The audit team may wish to perform some testing of the way in which the re-cycling is determined and what the systems process is for ensuring that the appropriate amount is deferred in equity in the first place and then subsequently released in the appropriate period.

In order to be able to measure and record ineffectiveness, one of the key starting points is being able to obtain the relevant fair values. This includes obtaining the fair value of the derivative either via market quotes or the use of models, and applying a valuation methodology that will include such things as the method that the entity uses to determine the extent to which the fair value of the hedged item has changed due to the hedged risk. It is important to note that this latter calculation (ie., the change in the hedged item due to the designated risk) does not equate to fair value.

The audit engagement team will determine how the entity obtains fair values and how these values feed into both the assessment of hedge effectiveness calculations and the reporting of any ineffectiveness.

Suitable processes should be in place to ensure that inputs taken from external sources are suitable for the valuation calculations being applied. The engagement team may well test some of the valuations based on independent observations of market data. The extent to which extensive substantive testing will be required will be determined by the efficacy of the controls environment in which fair values are captured and reported by the client. The more robust the systems and the controls surrounding those inputs, the less substantive audit work will be required to obtain an equivalent level of comfort by the engagement team.

7.6 Summary

Each audit firm will have its own methodology for assessing the effectiveness of the hedging relationships of its clients. This will cover all the requirements in an attest framework to provide sufficient comfort on the validity of the hedging relationships as reported by the clients and the capturing and reporting of the appropriate ineffectiveness.

Clients should be in a good position to work with their auditors to ensure that the appropriate steps have been taken such that, by the time the audit occurs, the appropriate documentation is in place and the engagement team is in a position to carry out their relevant testing as required with the minimum disruption to the client.

Although the requirements of IAS 39 are quite onerous in terms of hedge documentation, systems, processes and staff education, a well prepared client will experience a smoother audit than those who procrastinate with their paperwork. Documentation has to be in place at the inception of the hedge relationship, or on transition to IFRS, and accordingly for some entities it may already be too late to achieve hedge accounting for existing hedging relationships. ■

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Lessons from FAS 133 implementation in the US

8.1 Introduction

This chapter summarises our experiences and observations on how the introduction of SFAS 133 in the US has impacted the hedging behaviour of corporations and how relationships between corporate treasuries, accountants and financial services firms have changed as a result.

SFAS 133 is a rules-based standard and, as such, has contributed approximately 2,000 pages to US GAAP. The rules, documentation standards and testing requirements have served to move the majority of the operational burden from those who are concerned with the economics of the hedging transaction itself, the front office staff, to those who must ensure that the requirements of hedge accounting are followed.

As with IAS 39 the implementation of hedge accounting described in FAS 133 is entirely optional. Entities may always choose to enter into undesignated derivatives contracts and run the changes in marked-to-market value through the income statement, while recording them on the balance sheet at fair market value. However, hedge accounting permits entities to eliminate any timing mismatches between income statement recognition of hedged items and hedging derivatives, which would otherwise take place. Unlike IAS 39, however, FAS 133 specifies two operational accommodations – “shortcut” and “EZ-pass” (or “matched term”) – that allow corporations to get hedge accounting treatment without the need to perform a “long-haul” (ie, quantitative) hedge effectiveness test.

Despite the similarities with IAS 39, the impact of FAS 133 on corporate hedging behaviour has been different from what is expected with IAS 39. The ability to avoid “long-haul” hedge effectiveness testing by taking advantage of “shortcut” and “EZ-pass” has provided a strong incentive for US corporations to limit their hedging to only hedges that are eligible for this treatment. By contrast, IAS 39’s requirement to perform “long-haul”

effectiveness tests for all hedges means that firms reporting under IAS 39 are more likely to consider a broader set of qualifying hedges.

8.2 Impact on the corporation Hedging behaviour

The transition to FAS 133 has had a significant impact on the hedging behaviour of US companies. The uncertainty and complexity of the standard, along with a fear of earnings volatility, led to an initial reaction at most corporations to restrict risk management activities to plain vanilla hedges that would not only qualify for hedge accounting treatment, but would also not require a numerical effectiveness test. Since then, as corporations have become more familiar with the standard, hedging behaviour has begun to evolve to a more rational level. Now firms can be divided into two groups: those that are highly FAS133-sensitive and those that are less so.

Companies that are highly FAS 133-sensitive only pursue hedging strategies that qualify for shortcut and EZ-pass. These firms are willing to leave risk exposures unhedged in order to avoid earnings volatility coming from non-qualifying hedges at all costs. A key distinguishing variable in the hedging behaviour of these corporations is the extent to which shortcut and EZ-pass are available. The shortcut method for hedge accounting [FAS 133 Paragraph 68] specifies a number of required conditions under which corporations using vanilla interest rate swaps for cashflow hedges and fair value hedges may assume no ineffectiveness and hence be absolved of the requirement to assess effectiveness and measure ineffectiveness. This only applies to hedges of interest rate risk of recognised assets and liabilities. Under the EZ-pass method, a prospective user of a cashflow hedge for a forecasted (or recognised) foreign currency asset or liability may also assume no ineffectiveness if the “critical terms” of the underlying

hedged item and hedging derivative match [Paragraph 65 and Implementation Issue G9]. Note that for EZ-pass the hedging instrument can be a vanilla net purchased option, as well as a forward contract [Implementation Issue G20].

Generally we find that if it is at all possible to receive shortcut or EZ-pass treatment, entities will strongly prefer to move in that direction. Indeed, there is strong demand for newly structured transactions that will meet these requirements. The motivation behind the desire for shortcut and EZ-pass is based on the fact that these hedges will certainly be highly effective and it is advantageous to minimise the amount of work associated with establishing effectiveness. The alternative is to perform a “long-haul” hedge effectiveness assessment, which is an administrative burden that is both time consuming and resource intensive.

For companies that are not so FAS 133-sensitive, hedging strategies are driven primarily by the economic benefits of hedging and they are less likely to modify optimal economic hedges simply because of hedge-related earnings volatility. Most companies, however, have some degree of sensitivity to FAS 133, but many recognise that certain hedges provide enough economic benefits to offset any associated increase in earnings volatility. As a result, their risk management strategy includes hedges that don’t qualify for hedge accounting, as well as hedges that do qualify but require long-haul effectiveness tests.

Use of exotic derivatives has declined

Under FAS 133, the use of hedges involving “exotic” structures has declined precipitously. Exotic structures are derivatives products that involve an element of risk for the dealer that is not immediately hedgeable in the market. Examples of these risks are correlation risk and discontinuity risk. Generally, but not always, derivatives that display these risk characteristics have difficulty in achieving hedge effectiveness. We have seen rare instances where the underlying client exposures directly display these characteristics, thereby enabling a hedge accounting-compliant solution involving an exotic derivative.

However, such solutions are not very common, especially with industrial and service companies.

Risk management policies

FAS 133 has initiated a significant change in the substance, presentation and communication of corporate risk management policies. Whereas before the transition, there was no consistent format, either from a strategic or tactical perspective, a major impact of the standard has been to formalise and harmonise the disclosure associated with risk management policies and the hedging transactions entered into under them. An important requirement of FAS 133 is that firms must have well-articulated risk management policies in place before entering into any hedging programmes, as the standard requires that all hedging transactions be consistent with in-place policies. Companies that had such policies in place before transition have had to make three types of alterations. First, policies covering so-called “macro”, or strategic, exposures have frequently been eliminated, as FAS 133 precludes hedge accounting treatment for this sort of risk management activity. Second, accounting policies have had to become much more granular, focusing on hedging at a micro (exposure-by-exposure) level and covering contingencies that heretofore have been not addressed. Third, the strategy for hedge effectiveness testing needed to be covered by the policy.

Internal processes

The offices of the CFO and Treasurer have seen a dramatic change as a result of the introduction of FAS 133. One aspect of this has been the impact on internal processes and relationships. Before transition there was generally limited interaction between transactors of hedges and accounting staff. Now FAS 133 has forced a continuously consultative internal relationship between these parties. All accounting policies, including details about effectiveness testing techniques (where relevant), must be in place before transactions are executed. Furthermore, entities that are looking to transact hedges requiring complicated effectiveness testing, may find that this effort is not

required if the same hedging instrument is designated against a different underlying, giving the same overall economic benefit. To take advantage of these situations, the overall position of the entity from a FAS 133 perspective must be monitored. Never have accounting policy personnel had so much sway over the economic hedging activity of corporations.

8.3 Resource and training requirements

The advent of FAS 133 has led to a requirement for additional investment in new staff and specialised training for treasury and accounting personnel. Foremost has been the necessary ongoing commitment to education and training, both on a theoretical basis (in conjunction with the public accounting firms) and on a practical basis with respect to company-specific policies and procedures.

One of the surprising operational implications of the FAS 133 transition has been the extent to which the majority of the work has been borne by staff responsible for maintaining documentation. Public accounting firms are generally helpful in this regard: many have pre-designed forms for their clients to use when designating hedging relationships. As this all takes place on a quarterly reporting cycle and as the reporting for derivatives transactions is continually evolving, this requires a material dedication of resources, especially if entities are contemplating venturing outside the bounds of shortcut and EZ-pass hedge accounting.

Treasury and accounting personnel need also to be trained in the intricacies of performing effectiveness tests, if long-haul testing is used. This requires a minimal level of expertise in the valuation of derivatives and the underlying hedged items, as well as education on the concept of risk and statistics. Along with this is the need for systems and technology integration between treasury and accounting functions, together with the associated training of personnel. In particular, if long-haul effectiveness testing is to be performed, effectiveness test parameters, historical data files of market environments, along with securities and derivatives prices, must be maintained and

updated in a format that facilitates easy retrieval.

There is another twist to this for multinational corporations with international treasury centre operations. FAS 133 permits the netting down of internal derivatives used as foreign currency cash-flow hedges. Companies that operate in many countries around the world may have hundreds, if not thousands, of these type of transactions. Treasury staff must also keep track of the FAS 133 hedging activities of their non-functional currency subsidiaries, further adding to the administrative burden.

8.4 Interactions with Wall Street

Another aspect of this is how corporations interact with Wall Street firms and, in particular, the debt capital markets, equity capital markets and derivatives functions in investment banks and broker-dealers. Since the advent of FAS 133, we find that the level of discussions between these parties is immensely more reporting-focused and much less derivatives product-centric. In particular, for many corporations because the scope of the hedging tools that they have at their disposal is effectively much narrower than it used to be, interactions with investment banks tend to exhibit three characteristics. First, discussions are broader in context and more integrated with other financial activities and risk exposures (eg, capital markets activities and the debt profile). Second, the dialogue moves more quickly and more deeply into the accounting of the hedges and identifying the alternative transactions that accomplish the same economic end. Finally, investment banks are providing materially more information to clients including periodic valuations of derivatives, as well as inputs into effectiveness testing models and the effectiveness testing analysis itself.

Because of the neutral treatment afforded to qualifying derivatives-embedded assets, we have found more issuers receptive to discussions regarding medium term note (MTN) issuance with the embedded derivatives hedged out, yielding a net plain vanilla fixed-rate or floating-rate liability for the issuer. Many corporate and financial institutions issuers have dedicated resources on their staff focusing on

these so-called “reverse inquiry” MTN issues.

There is one final aspect concerning the corporate relationship with Wall Street. This is the treasury function’s interaction with the equity analyst community. Corporations feel that, despite improvements in understanding of their economic risk management strategy, analysts by and large still do not fully appreciate the long-term benefits of hedging. As such, many entities prefer to report a more predictable earnings pattern and still have a high incentive to follow a hedge accounting programme that will lead to minimal volatility in reported earnings. This is what has moved many industrial and service sector entities away from transacting in exotic derivatives. Indeed, there have been instances where we have seen entities keep large economic risk positions unhedged purely out of fear of the earnings volatility that would result from derivatives transactions that either don’t qualify for hedge accounting or qualify but require long-haul effectiveness testing and lead to residual ineffectiveness.

8.5 Public accounting firms and auditors

Public accounting firms have also seen material changes in their business as a result of FAS 133. In addition to their role in advising the FASB in standard setting, the accounting firms have had to dedicate enormous resources to training their staff in derivatives, hedge accounting and hedge effectiveness testing. Because of the structure of these organisations, accounting professionals on several levels will be actively engaged in hedge accounting discussions. Members of the national committee, typically the most senior professionals in the firm, will be broadly engaged in policy issues around the firm’s clients’ usage of hedge accounting. They will be the ultimate arbiters of their clients’ financial statements, as the public accounting firm needs to sign-off that the statements are in compliance with US GAAP. The day-to-day contacts with client entities are the local engagement teams, which provide the initial points of contact for most hedge accounting inquiries.

An intriguing development in accounting firms has been the emergence of dedicated derivatives

and structured finance groups. These groups work with the local engagement teams and often with investment bank derivatives teams in providing implementation guidance on client hedge accounting issues. Frequently, these discussions become highly technical in nature. Whereas these groups do not have the authority of a national committee, they have far more technical expertise and generally have a close relationship with the national committee.

Finally, another key group that has emerged within the public accounting firms is the valuation group, which bears the responsibility of verifying the accuracy of client calculations. It is extremely important to understand that the accounting firms do not produce the hedge accounting entries: their role is to audit and to verify that the client’s financial statements are in compliance with US GAAP. So the valuation group provides verification of the calculations involved in hedge effectiveness analysis.

8.6 Lessons for IAS 39 adopters

The similarity between the two accounting standards means that many of the lessons learned in the transition to FAS 133 are relevant to corporations adopting IAS 39. From the discussion above, corporations should:

- ☐ Be prepared for immensely more granularity in written risk management policies and processes, particularly in designating and measuring hedge accounting relationships.
- ☐ Be prepared to invest in the training and education of treasury and accounting staff.
- ☐ Be prepared for markedly more “noise” in financial statements, which may be exacerbated by economically effective hedges that do not fully offset hedged risks in earnings.
- ☐ Be prepared to communicate your risk management policy to investors and analysts, and to explain the “noise” in the accounts in terms of a well justified hedging strategy.
- ☐ Be familiar with the key constituencies internally and externally who can provide assistance. ■

Steve Wolf, JPMorgan

Implementing strategic risk management under IAS 39

9.1 Strategic risk management under IAS 39

In this final chapter we address the formulation of risk management policy and the risk management process, which link together all the issues discussed in earlier chapters. In particular, Chapters 2 and 3 provide the basis for setting a rational risk management policy, and Chapters 3 to 7 describe many of the key elements for implementing an appropriate risk management process.

9.2 Risk management policy

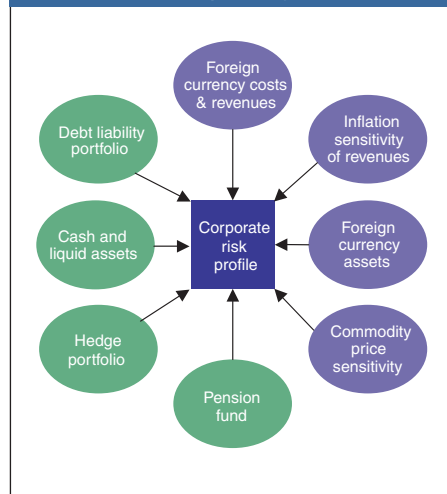
Corporate risk management policy must be founded on thorough understanding of the profile of risk exposures facing the firm, the extent to which the risk profile can be adjusted and the ways in which any adjustment can be implemented.

Strategic risk management and corporate ALM

Strategic risk management is essentially just asset and liability management, or ALM. Regardless of the context it generally boils down to managing the mismatch between different exposures, for example, the mismatch between revenues and costs, inflows and outflows, or assets and liabilities. The starting point is to take an integrated view of the corporate risk profile (see Figure 9.1). This profile typically reflects a portfolio of risks that includes various foreign exchange, interest rate, commodity, equity, credit and inflation exposures, in addition to non-financial business operational risks. Risk management can then be viewed in three parts: risk measurement, risk optimisation and risk adjustment.

Risk measurement, is crucially dependent on how performance is measured. This is because risk needs to be evaluated in terms of the appropriate performance metric or metrics. In general this means evaluating the impact of the corporate risk profile on cashflow, earnings, balance sheet, SVA, debt covenants, firm value, etc.

Figure 9.1: The corporate risk profile involves different exposures, only some of which can be easily managed



Risk optimisation involves making a decision as to the optimal exposure profile for the corporation, with respect to the appropriate performance metrics. This decision takes account of not just the overall level of risk, but also the balance between different risks, hedging costs and the potential upside associated with different strategies. In other words, it corresponds to risk-reward optimisation. In general this involves both a strategic optimisation (to identify the optimal long-term exposure profile) and a tactical optimisation (to take account of short-term business and financial market-related factors). So the optimal risk profile for any corporation is made up of a combination of the optimal strategic profile, together with some shorter-term tactical deviations.

Moreover, the optimal risk profile must reflect an appropriate balance between different performance metrics, especially between economic

metrics (eg, cashflow) and accounting metrics (eg, reported earnings).

Risk adjustment is carried out by modifying certain exposures to obtain the desired risk profile. Typically this involves modifying the exposures associated with four types of financial portfolios:

- ☐ The debt liability portfolio.
- ☐ The cash and liquid assets portfolio.
- ☐ The hedging portfolios (forex hedging, commodity price hedging, etc).
- ☐ The pension fund.

Note that modifying these exposures does not always involve the use of derivatives. For example, debt liabilities can be modified either through derivatives (eg, swaps) or directly through future debt issuance. Taken together, these four portfolios provide significant scope to fine-tune the corporate risk profile so that it reflects an optimal trade-off between risk and reward for the company in question, over both the long run and the short run.

A framework for corporate ALM

Figure 9.2 illustrates a framework for corporate ALM that can be used to develop risk management policy. This framework consists of five main steps that have been successfully applied to many different corporations across a wide range of industries globally.

Step 1 in the framework involves setting the

context of the ALM analysis, which is customised to each corporation. Then Step 2 specifies the performance metrics that are relevant to the risk policy decision. Typically the primary metrics will include cashflow and earnings (pro forma and/or reported earnings). Step 3 deals with the development of the “exposure map”, which was discussed in Section 2.2. The exposure map defines how risk impacts the relevant performance metrics. Clearly there are different exposure maps for different metrics. For example, the earnings exposure map reflects how forex volatility, interest rate risk, inflation uncertainty, commodity price risk, etc. impact reported earnings (taking account of the appropriate IAS 39 treatment), whereas the cashflow exposure map reflects how these risks impact cashflow.

Steps 4 and 5 in the framework are the decision steps that define the risk management policy. These steps make a clear distinction between the strategic and tactical aspects of risk management and emphasise how they are linked through the concept of an exposure “benchmark”. An exposure benchmark is essentially a policy for managing corporate risk exposures that is optimal in relation to the corporation’s long-term objectives. The benchmark sets the strategic direction for exposure management by defining the target long-term strategy, which is then used as the reference point for short-term tactical management. Tactical decisions are therefore evaluated relative to the benchmark:

Figure 9.2: Framework for strategic risk management involves a corporate ALM approach

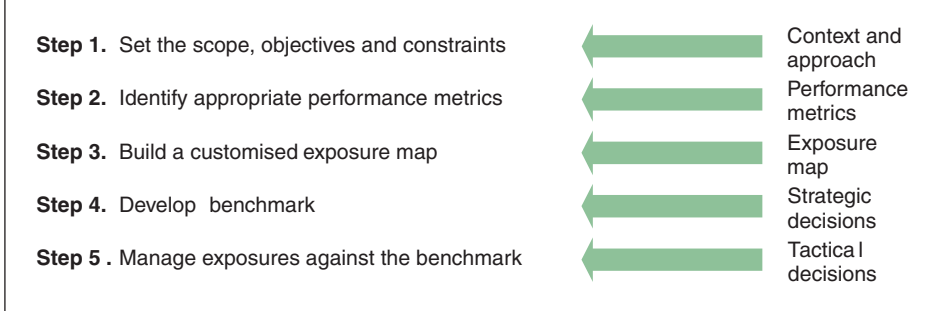
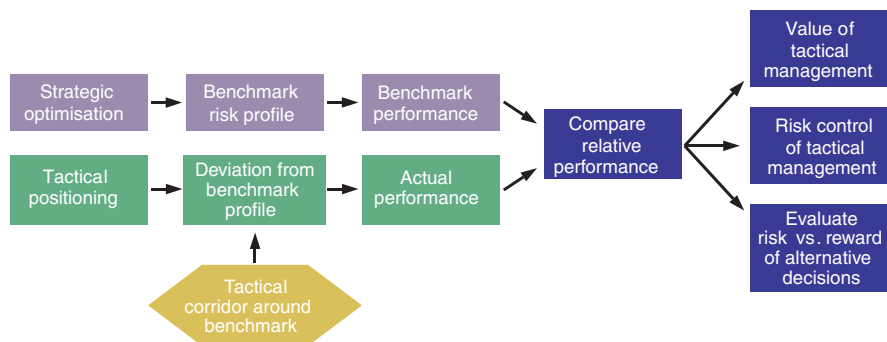


Figure 9.3: The exposure benchmark provides the basis for managing tactical decisions in terms of performance evaluation, risk control and decision making



the expected benefit (reward) is measured in terms of outperforming the benchmark and the risk is measured in terms of the risk of underperforming the benchmark. In this way, the benchmark can be viewed as the link, or bridge, between strategic risk management and tactical risk management.

An important practical question is how the concept of a benchmark is actually used with an activity such as forex hedging or debt management. In the context of forex hedging, the benchmark essentially corresponds to the optimal forex hedging policy and specifies the target hedge ratio, hedging instruments and tenors for different exposures in different currencies. Tactical hedging then involves varying the hedge ratio, hedging instruments and hedge tenors within a corridor around the benchmark.

The output from this corporate ALM framework involves a number of elements used to set the risk management policy including:

- ☐ A “benchmark” defining the target or “neutral” risk profile that is optimal over the long run.
- ☐ A risk-based “corridor” defining the usual range of tactical deviations from the benchmark.
- ☐ An earnings-at-risk monitoring limit that defines the usual range of earnings volatility for pure economic hedges (strategic or tactical).

9.3 Risk management process

A risk management process emerges naturally from the framework discussed above. There are three elements to this:

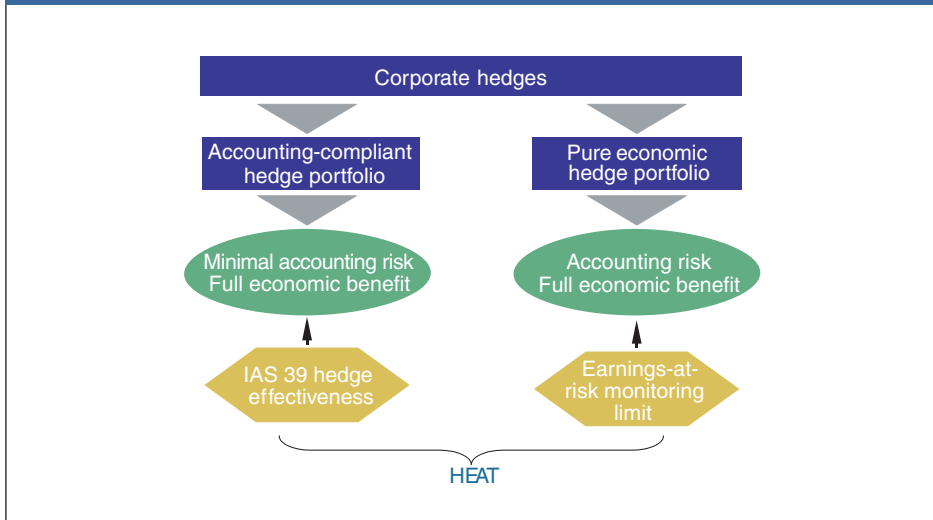
- ☐ A decision process.
- ☐ A monitoring and control process.
- ☐ A communication process.

The decision process

The decision process is defined by the corporate ALM framework and driven by the company’s exposure map, performance metrics and overall objectives. The balance between economic performance and accounting performance will have to be evaluated as part of this decision process. Strategic decisions relating to risk management policy involve identifying the exposure benchmark and the corridor for tactical deviations. These should be evaluated in a framework similar to the one we have described and should be reviewed annually, or whenever there is a material change in the risk profile or objectives of the company.

Tactical decisions must be made in a way that is consistent with the benchmark and its tactical corridor, with any breaches of the corridor addressed according to a specified procedure. Tactical decision-making should involve an evaluation of the risks and rewards of alternative

Figure 9.4: The new paradigm for corporate risk management involves a process for separately managing accounting-compliant hedges and pure economic hedges



courses of action, with risk being evaluated both in absolute terms and in terms of the risk of underperforming the benchmark.

An essential element of the implementation of any hedging decision (strategic or tactical) will involve validating the economic benefit and assessing whether the particular hedging instrument is likely to qualify for hedge accounting treatment. Should it fail to qualify, the impact on earnings volatility must be considered along with that of other “pure economic” hedges.

The monitoring and control process

The monitoring and control process is an essential part of demonstrating a well-managed and well-designed risk management policy. This element of policy should address both ongoing monitoring and periodic reviews of different aspects of risk management and hedging, including:

- ☐ The corporate risk profile.
- ☐ The exposure map.

- ☐ The exposure benchmark.
- ☐ Tactical decisions.
- ☐ The overall hedge portfolio.
- ☐ Documentation of strategic and tactical risk management decisions, hedges and policy.
- ☐ Management reports and reviews.
- ☐ Hedge effectiveness evaluation.
- ☐ Escalation procedures.

By way of illustration, the process for monitoring and managing tactical decisions is shown schematically in Figure 9.3. The deviations from the benchmark that characterise any tactical decision are controlled through the definition of the tactical corridor. The performance relative to the benchmark provides the basis for determining the value added by tactical decisions, controlling the risks and evaluating alternative courses of action.

Similarly, the process for monitoring the overall hedge portfolio involves the paradigm discussed in Chapter 4. This is illustrated in Figure 9.4. Accounting-compliant hedges must sit with-

in a robust process for hedge designation, documentation and effectiveness testing (such as that described in Chapters 5, 6 and 7) and pure economic hedges should be managed with respect to an earnings-at-risk monitoring limit.

The communication process

As we emphasised in both Chapter 3 and Chapter 4, it is essential for companies to effectively communicate their risk management policy to investors, rating agencies and equity analysts. This includes explaining the rationale for the chosen risk management strategy, the control and management processes discussed above, and additional disclosure to illuminate the underlying economics.

9.4 Summary and conclusions

In this guidebook we have addressed the issues and challenges that IAS 39 poses for corporate risk management. The key message has been that corporations should keep the economic benefits firmly in mind.

It has always been important that corporations formulate a rational and appropriate risk management policy to serve as the basis for their risk management and hedging decisions. Under IAS 39, this becomes essential, since obtaining hedge accounting is conditional on hedges being consistent with such a policy. This policy must reflect the business context of the corporation, as well as the economic benefits and accounting impact of hedging. In this chapter we have outlined one framework for formulating policy and designing a risk management process.

The introduction of IAS 39 paradoxically means that certain types of hedging, while reducing risk in economic terms, can actually introduce more volatility into the balance sheet and income statement. Under IAS 39, like FAS 133, economic hedge effectiveness is no longer the same as accounting hedge effectiveness. The reasons for this are threefold:

- ☐ Only certain types of hedge relationships are allowed to be designated as hedges under IAS 39.

- ☐ IAS 39 imposes arbitrary thresholds for hedges to be considered “highly effective”.
- ☐ IAS 39 hedge effectiveness must always be measured in terms of “fair value”.

This lack of alignment between the economics and the accounting means that corporations need to simultaneously manage both. As a result, corporate hedges need to be split into two categories:

- ☐ A portfolio of “accounting-compliant” hedges that qualify for hedge accounting treatment and for which effectiveness must be verified.
- ☐ A portfolio of “pure economic” hedges that reduce economic risk, but don’t qualify for hedge accounting treatment. Their contribution to earnings volatility (and balance sheet volatility) must be measured, monitored and managed.

The accounting-compliant hedges need to be carefully designated as hedges under IAS 39, and hedge effectiveness needs to be evaluated and monitored on an ongoing basis using a framework such as HEAT, which was described in Chapter 5. The pure-economic hedges should similarly be monitored to verify their economic effectiveness, and managed in relation to an earnings-at-risk monitoring limit. Corporations should not fear that their share price will be automatically downgraded because of additional earnings volatility arising from economically effective hedging. Provided the hedging is consistent with a well-founded risk management strategy that is also well-articulated, investors and analysts have indicated that their evaluations of companies will not be accounting-driven, but based on an assessment of the underlying economics. This means that corporations need to ensure that their risk management strategy is:

- ☐ Economically sensible.
- ☐ Clearly communicated.
- ☐ Supported by disclosure of enough data and commentary to help investors understand the economic reality. ■

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